

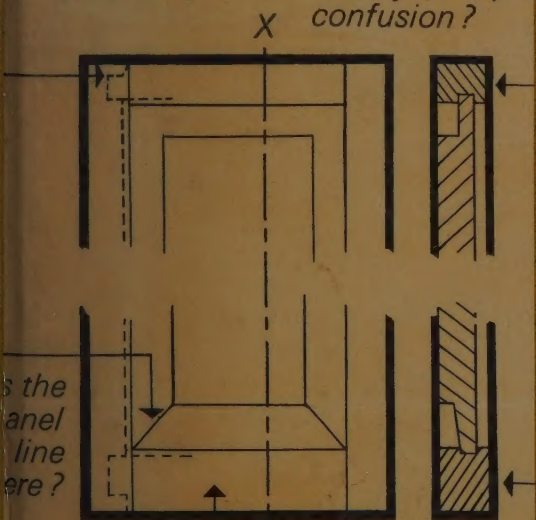
a designer's approach to woodwork



D. W. Egelstaff

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A designer's approach to woodwork

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Applied Arts and Crafts Division

A designer's approach to woodwork

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Artwork and Book Design



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2 083975 21
Pergamon Press Ltd., Headington Hill Hall, Oxford
4 & 5 Fitzroy Square, London, W.1

Pergamon Press (Scotland) Ltd., 2 & 3 Teviot Place, Edinburgh 1

Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, New York
10523

Pergamon of Canada, Ltd., 207 Queen's Quay West, Toronto 1

Pergamon Press (Aust) Pty. Ltd., 19a Boundary Street, Rushcutters Bay,
New South Wales 2011, Australia

Pergamon Press S.A.R.L., 24 Rue des Écoles, Paris 5^e

Vieweg & Sohn GmbH, Burgplatz 1, Braunschweig

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First published 1970

Library of Congress Catalog Card No. 68-9500

Printed in Great Britain by A. Wheaton & Co., Exeter

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Preface

The teaching method set out in this book is one that has been successfully used over a number of years by many handicraft teachers. It aims at encouraging pupils to take a major part in the design of their practical craftwork and so to develop more fully their creative abilities and powers of artistic expression. The teacher works primarily with the individual, and class teaching, therefore, is limited to the demonstration of basic tool operations and the explanation of constructions and processes.

The programmes outlined in the following pages are suitable for all who have begun to handle tools correctly and who now want to make things. At the end of each stage the teacher should discuss with the pupil the work produced so far. Faults should be pointed out and suggestions for improvement invited.

The research section of each programme encourages the pupil to observe, enquire, and experiment with design. Then by working on full size representations he translates his design into real terms. Occasionally a mock-up in solid material can be made at this stage, but care must be taken not to waste time on this. Scale models in balsa wood are sometimes useful, but the method generally recommended is the full size line drawing in orthographic projection. This is best done in chalk on a plywood blackboard, so that alterations can quickly be made. In the third stage of each programme working drawings are prepared. These need not be too complicated. The standard of draughtsmanship will depend to some extent upon whether or not technical drawing is pursued as a separate subject in the curriculum. If pupils do not have a knowledge of technical drawing, a few hours should be set aside for some instruction in it.

It is generally found that the whole of the design process can most efficiently be carried out in an area specially reserved for this purpose. A corner of the workshop, or a recess, can be so arranged that it accommodates all the necessary equipment, and provides adequate storage space for all the drawings.

Teachers can encourage a good standard of design not only in the workshop but in the school as a whole. A permanent display area for pupils' craftwork creates enthusiasm, spreads new ideas and stimulates the less able. Pictures of first-class work and a

wide range of books on the subject, both in the library and in the workshop, contribute to a creative environment. It should be noted, however, that educationists today try to avoid too much dependence on books of working drawings.

In the teaching of this subject we must make it clear that design does not mean just the general appearance and ornamentation of an article. All too often pieces of furniture are designed in school workshops without due regard for their eventual placing in the home. Twenty specific problems in design have been devised, therefore, in order to focus attention on the importance of the setting. These are followed by a series of photographs and commentaries, illustrating and emphasizing once more the basic principles of good design which it is the purpose of this book to teach.

Acknowledgements

For permission to reproduce the photographs in this book I am indebted to:

Odhams Press Ltd.	..	..	..	..	..	cover and page 117
English Rose Kitchens Ltd.	..	..	..	..	..	page 109
Gordon Russell Ltd.	..	..	..	..	..	page 111
Council of Industrial Design	..	..	..	..	..	pages 113, 119, 121
Heal and Son Ltd.	..	..	..	..	..	page 115
Country Life Ltd.	..	..	..	..	..	page 123

I am also grateful for the help given by my colleague Gordon Dennis, and for the assistance and encouragement given by my wife.

D.W.E.

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Introduction

Read each programme through before you start to work on it. You will then see what problems have to be tackled and be better able to think of your design as a whole.

Research This section of the programme is intended to encourage you to find out for yourself the purpose and essential requirements of the article you are to design. Use reference books. Examine similar articles at home and in shops and exhibitions. Take all the measurements that you think will be useful. Then make a number of freehand sketches of different designs for the article, and try out variations of one particular design that you find most satisfactory. When you have collected together all your information and made your sketches, show them to your teacher. Any serious faults in your design can easily be corrected at this stage.

Full size drawings Most full size drawings can be made in chalk on a portable blackboard, with the aid of a T square. Articles that are too large for this board may be drawn in chalk directly onto the floor, and very small articles may be drawn full size with pencil and paper on the normal drawing-board. For some pieces of work you may like to make a scale model in balsa wood. You will find, however, that full size chalk and pencil drawings give you an opportunity to test size and appearance and to experiment easily and quickly with modifications. When you are satisfied with these drawings show them to your teacher.

Working drawings These are scale drawings in which the final details of your design are worked out so that the information is at hand during the construction of the article. See that the lay-out of your drawing is well balanced. Remember to keep construction lines faint and to line-in with a thick line. All the essential features of your design must be included, particularly the construction and dimensions. When these working drawings have been checked by your teacher you will be ready to start on the practical side of your work; you will not then be able to change the main parts of your design but you should continue to think of ways of improving the details.

Note Metric conversions are calculated to the nearest whole number.

Bread boards, cheese boards and chopping boards

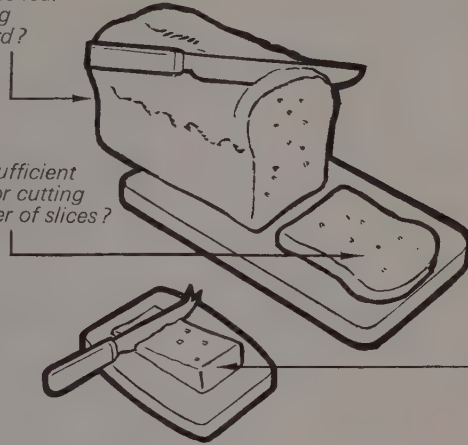
Research

- (1) Consider the purposes of these boards. On them we cut, prepare and pass food of different kinds.

A board on which to cut food

Could the loaf overhang the board?

Is this sufficient space for cutting a number of slices?



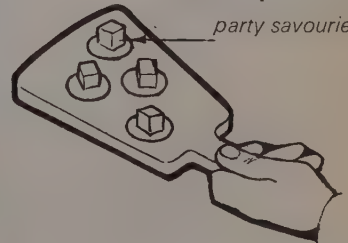
What other cheese shapes are there?

A board on which to prepare food sandwiches

Is your bread already sliced?



A board on which to pass food party savouries



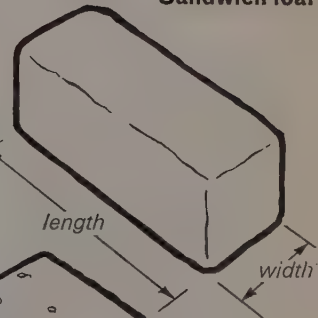
- (2) Measure various types of loaf and pieces of cheese.

Try to find out how the shapes of loaves and cheeses originated.

Farmhouse loaf



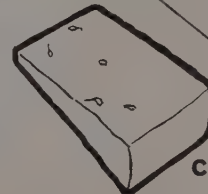
Sandwich loaf



Small loaf



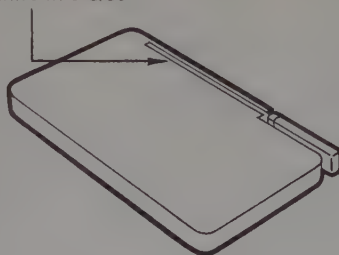
Cheddar cheese



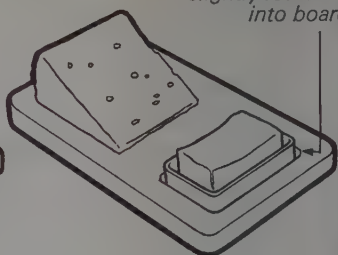
- (3) Do you wish to include a knife or perhaps a butter dish in your design?

Boards with knives and butter dishes

knife in a slot



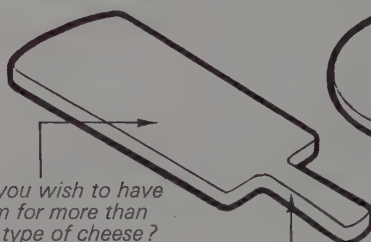
butterdish slightly recessed into board



- (4) Would a handle be a help or a hindrance?

Boards with handles

Do you wish to have room for more than one type of cheese?



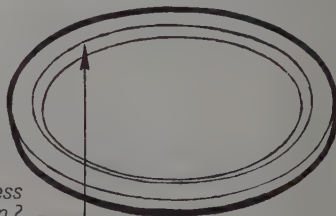
Do you think this handle would feel comfortable?

Would a bevelled edge help the finger grip?

- (5) Sometimes a recess for crumbs is incorporated.

A circular board with crumb recess

Can you think of other arrangements that would prevent the crumbs from spilling over but not cause a hindrance when the loaf is cut?



Will the crumb recess be easy to clean?

- (6) Many pleasing board shapes are possible. Here are three. Can you think of more?

- (7) Make your own sketches of pleasing and useful board shapes.



Circular (lathework)



Elliptical



Rectangular

Full size drawings

- (1) Draw the shape of your chosen board on thin card and then cut it out.
- (2) If possible, try out a loaf or cheese on your card.

- (3) Make any alterations you think necessary.

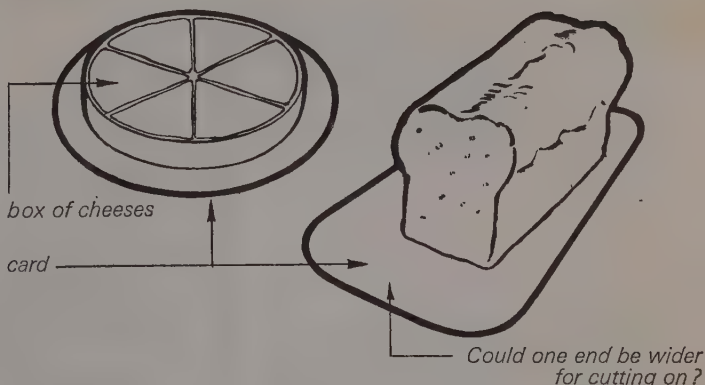
Working drawings

- (1) Draw an elevation and a plan, working from a centre line.
- (2) When considering the thickness take into account edge shapes and finger grips. These should be both practical and pleasing in relation to your design as a whole. Some possibilities are illustrated here. Can you think of more?

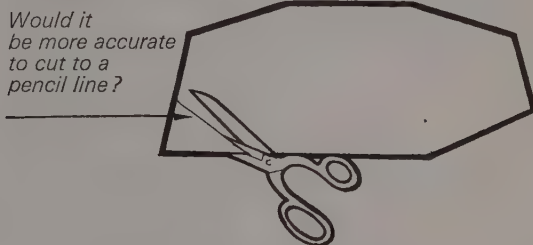
How thick will the board need to be if it is to remain flat? Would a plastic laminate be an acceptable surface?

- (3) Do you think any carved decoration is necessary?
- (4) Only certain woods are suitable for these boards. Why? Different woods may be jointed together for a decorative effect.
- (5) Try to find out what sort of finish is suitable for a board that is used for food.
- (6) Check to see that you have put dimensions, title, scale and your name on your drawings.

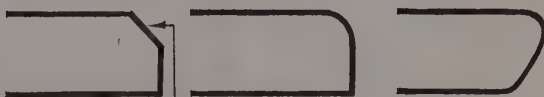
Trying the card cut-out



Improvements being made with the scissors



Edge shapes

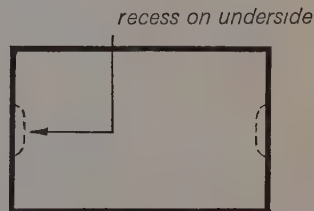


Does the shape combine with your design as a whole?

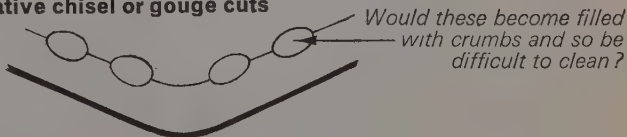
Finger grips



Will this fit the shape of your finger comfortably?



Decorative chisel or gouge cuts



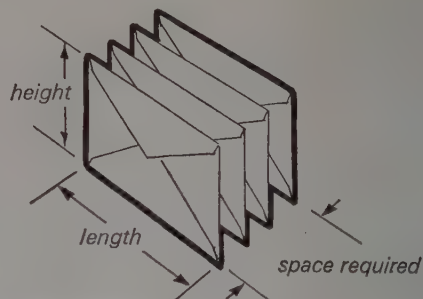
Research

- (1) Measure various sizes of writing paper and envelopes and keep these sizes constantly in mind while designing your rack. If the letters are to rest on edge, estimate how deep the rack should be to hold a reasonable quantity.

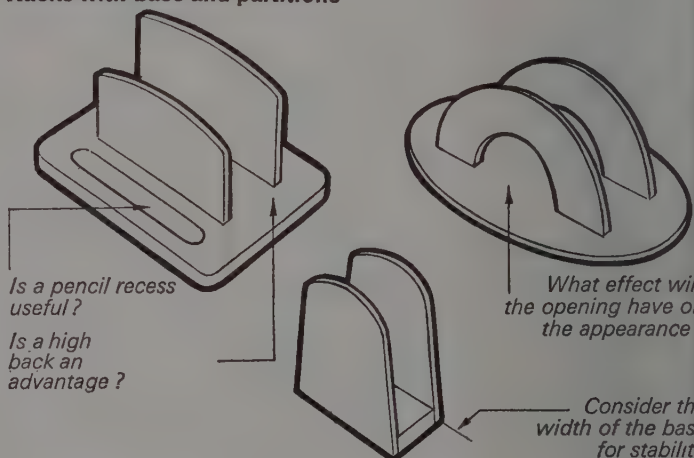
- (2) Letter racks fall into two main categories: those with bases and partitions and those with ends and rails. You may be able to think of other constructions, or you may wish to adapt your rack for the storage of other items of stationery.

- (3) Make freehand sketches of various types of rack and try to create a design that fulfils your special requirements.

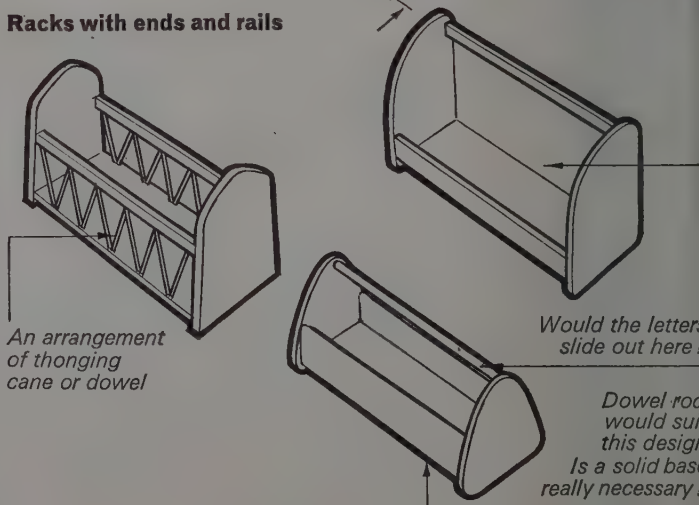
Calculating the basic requirements



Racks with base and partitions



Racks with ends and rails



Full size drawings

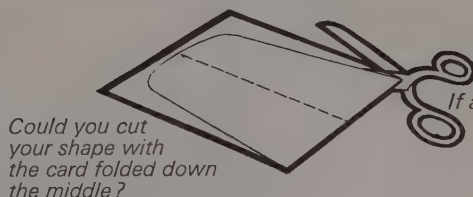
- (1) Cut out in card the shape of the partitions or ends of your rack. Experiment to find out how far apart they should be placed.
- (2) Try to correlate the form of the remaining parts with the form of the partitions or ends.

Working drawings

- (1) Choose a suitable scale and begin to draw the front elevation, end elevation and plan.
- (2) The thickness of the various parts must be sufficient to allow for strength and good jointing and yet not look clumsy. Measure specimen pieces of wood to help you make your judgment. When deciding on what joints to use remember that for end grain jointed to side grain a mortise and tenon or housing joint will probably be best; but if side grain is jointed to side grain then a grooved or screwed joint can be used.

- (3) Complete your drawing and then check to see that you have included dimensions, title, scale and your name.

Cutting the shape in card

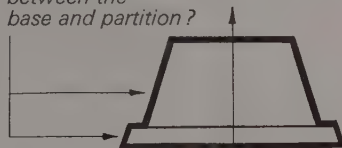


Could you cut your shape with the card folded down the middle?

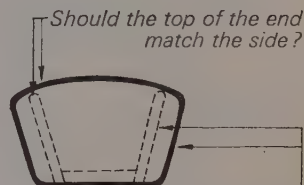
If at first your shape is not pleasing, try again

Correlation of parts

Is there unity between the base and partition?



How much of the letter can extend over the partition without falling out?

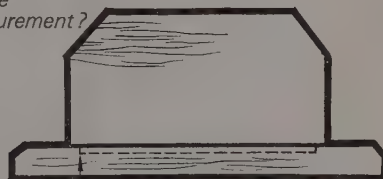


Should the top of the end match the side?

Need the side be set at the same angle as the end?

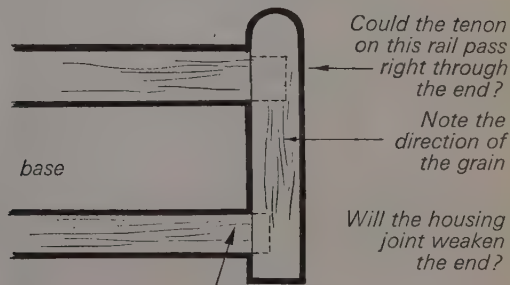
Grooved joint for base and partition designs

Why is it that the grain is nearly always made to flow along the longest measurement?



Why is this joint set in from the end of the partition?

Tenon and housing joints for end and rail designs



Could the tenon on this rail pass right through the end?

Note the direction of the grain

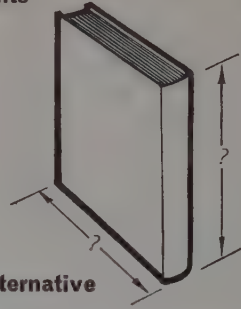
Will the housing joint weaken the end?

Book racks and book ends

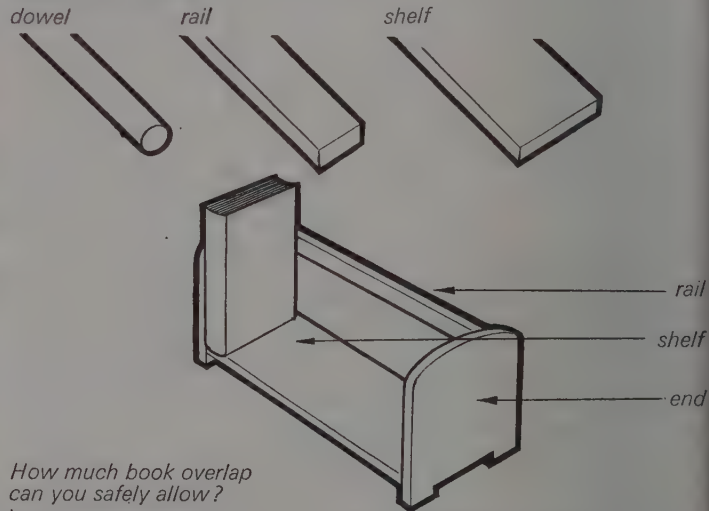
Research

- (1) Consider the types of book that you wish to keep neatly arranged in a rack or between ends. Write down the measurements of these books.
- (2) Book racks usually consist of two ends held apart by shelves, rails or dowels, which support the books.

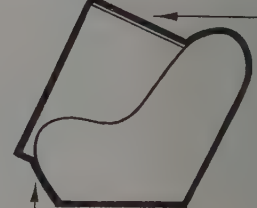
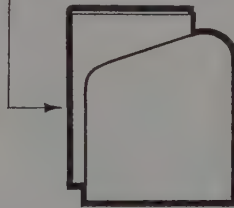
Book measurements



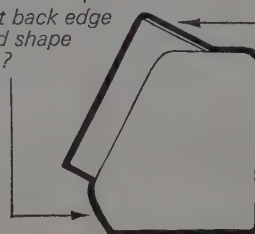
Book rack with alternative support and ends



How much book overlap can you safely allow?



Does this cut back edge make the end shape more unified?



Is it an advantage to have a tilted book?

What effect will feet have?

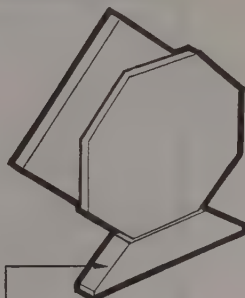
- (3) Book ends are usually made in pairs and provide end-support only for a row of books. Several basic types should be considered.
- (4) Sketch out several different designs. Decide upon the best, but ask yourself the following questions: Does the shape of the end suit the shape of the book? Are the parts in harmony? Is it desirable to use a wood similar to, or in contrast with, the furniture upon which the rack or ends are to be placed?

Full size drawings

- (1) Draw on cardboard the shape of the end you have decided to make. Cut it out.

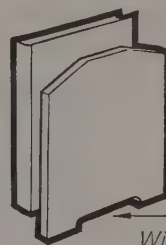
If necessary, make alterations.

Foot added to the end



Does this give a stable appearance?

Feet cut into the end



Will this recess prevent rocking?

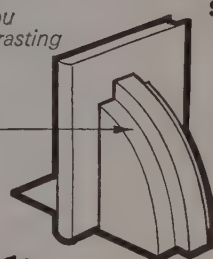
Jointed bracket



Is this heavy enough to hold the weight of books?

Could you use contrasting timbers?

Solid block



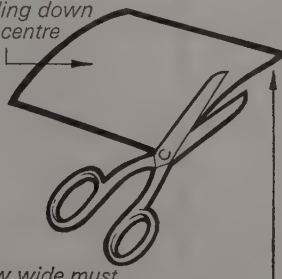
Metal base under books

What decorative work could you have?

Combinations of these types are also possible

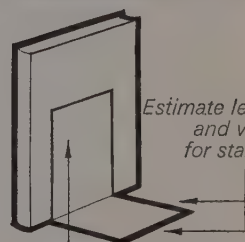
A book-rack shape

Both sides of this subtle curve may be cut alike by folding down the centre



How wide must this be for a firm stand?

A folded card ready for cutting a book-end shape



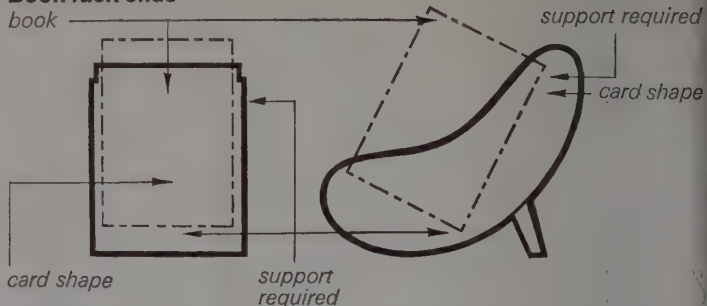
Estimate length and width for stability

How much area is needed to support the book?

- (2) To find the right position for the book-rack supports, place a book on the card shape and draw around it.

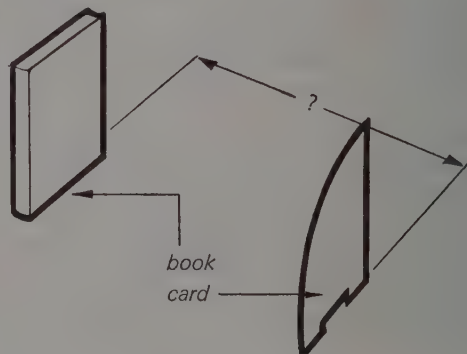
Where must the centre of gravity be?
Will your rack topple over?

Book-rack ends



- (3) Use the book and card to estimate the length of the rack. Is it proportionate?

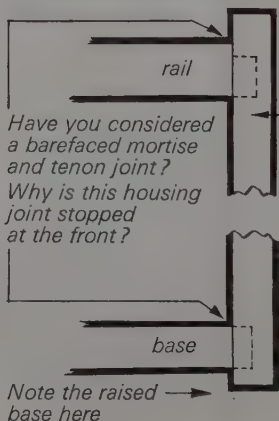
Estimating the length in proportion to the height and width



Working drawings

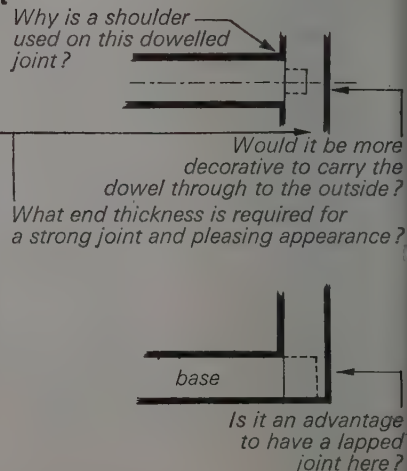
- (1) Choose a suitable scale and begin the drawing of the front elevation, end elevation and plan.
- (2) Try to think of the construction of your book rack in association with the other aspects of your design. Four joints suitable for the ends are illustrated here.

A mortise and tenon joint and a stopped housing joint



Have you considered a barefaced mortise and tenon joint?
Why is this housing joint stopped at the front?

A dowelled joint and a lapped dovetail joint

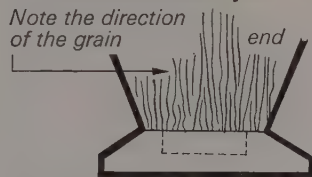


Why is a shoulder used on this dowelled joint?

Would it be more decorative to carry the dowel through to the outside?
What end thickness is required for a strong joint and pleasing appearance?

Feet may be attached by means of a mortise and tenon joint or a screwed joint.

A mortise and tenon joint



Why is the underpart of the foot kept clear of the joint?

A screwed joint

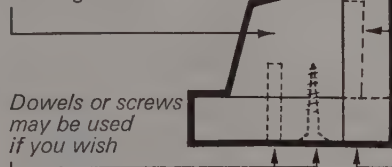


Slot screwing could be used here. Have you discovered this method yet?

Will the screw head be countersunk below the surface?

Jointed book end construction

Have you thought about the direction of the grain?



How deep should this groove be?

What sort of dovetail joint would you advise?

Would a layer of felt underneath improve the bookend?

Shaping the edges



rounded



bevelled and rounded



chamfered



bevelled

Can you think of other methods?

(3) These joints may also be used for jointed book-end construction, but simpler forms are possible.

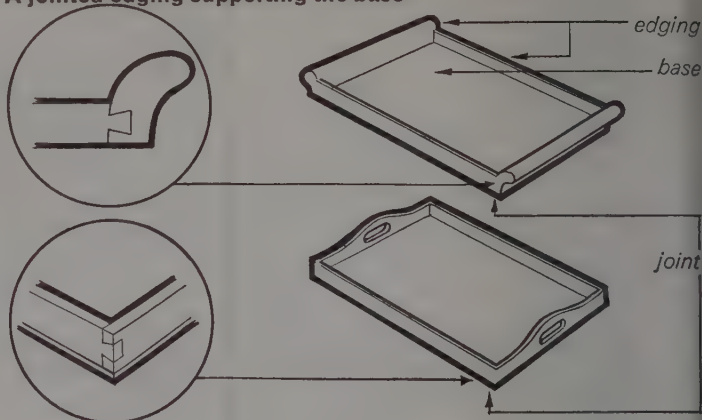
(4) The appearance of the edges of your wood may be made more delicate by some form of shaping.

(5) Line in and mark dimensions on your drawing. Show hidden detail by a line of short dashes, thus, - - - - -. Make sure that you have included the title, scale and your name.

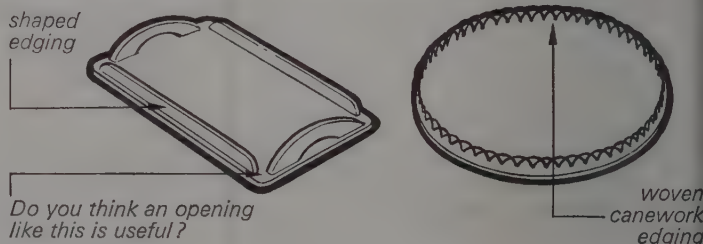
Research

- (1) The construction of a tray may consist of a strong edging supporting a thin base or a thick base supporting a light edging. These are the usual variations. Is it possible to have other combinations?

A jointed edging supporting the base

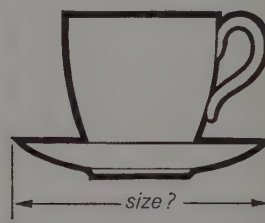


A thick base supporting a light edging



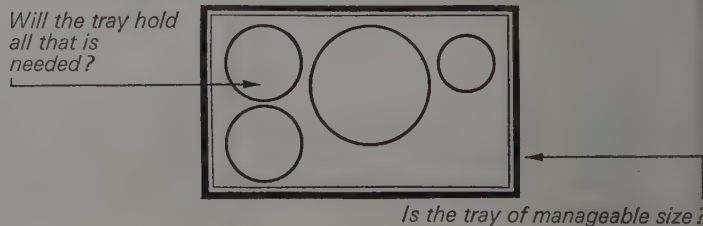
- (2) Make a list of the items likely to be carried on the tray. Write down their measurements.

Saucer measurements



- (3) Experiment with various sizes of tray in full size outline plan until you discover a shape that is both practical to use and pleasing to look at. It may help you to cut out the shape in paper or card.

Estimating the tray size from the objects to be carried



- (4) Make preliminary sketches of your tray, keeping in mind the decisions made so far.

Full size drawings

- (1) Begin to draw the two elevations.
- (2) If a handle is considered necessary it may be provided in one of the ways illustrated here.

Measure your own fingers before designing a handle.

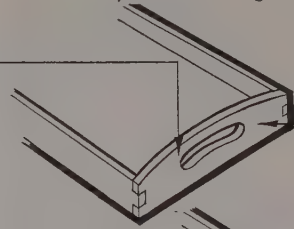
A well-designed handle will be in harmony with the end shape.

- (3) The height of the side is determined by the type of joint used and the need to prevent things sliding off.

A cut-out handle

Is this the weakest point of the handle?

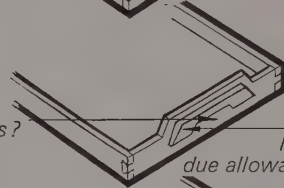
Why is the end higher than the side?



An added handle

Is there room for the fingers?

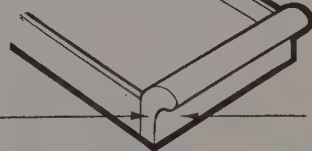
Have you made due allowance for fixing?



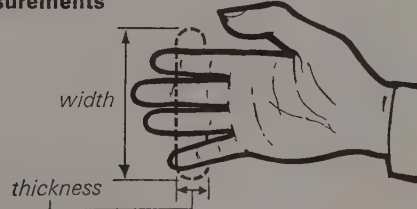
A shaped-end handle

Is there sufficient strength for the joint and the shaped handle?

Is this shape comfortable?



Finger measurements

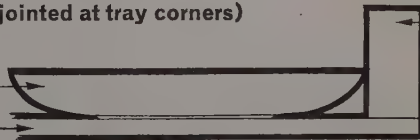


High side (jointed at tray corners)

side

saucer

base



Low side (secured through the base)

saucer extends over side

base

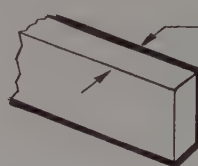
low side



Working drawings

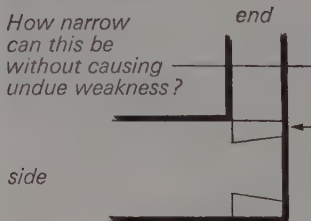
- (1) Choose your own scale and begin the drawing of the elevations and plan.
- (2) The thickness of the side may be $\frac{3}{8}$ " (10 mm) or $\frac{1}{2}$ " (13 mm), according to the size of tray.
- (3) Many types of corner joint are possible but the dovetail is usually the best. Why? Why is the "tail" part of the joint cut on the side piece?
- (4) Plywood bases may be pinned, screwed or jointed; but in each case they should be glued as well. Why? Solid wood bases must be allowed to shrink and swell. A separate handle may be glued and screwed. Try to discover screws of different lengths, gauges, head shapes and metals.
- (5) In choosing your hardwood and finish, bear in mind the effects of high temperatures and destructive liquids.
- (6) Check your drawing carefully before removing it from the drawing-board. Have you included title, scale, dimensions, cutting list and your name?

Side of tray



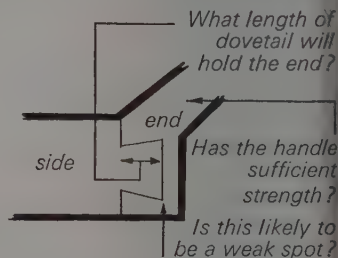
Through dovetail

How narrow can this be without causing undue weakness?

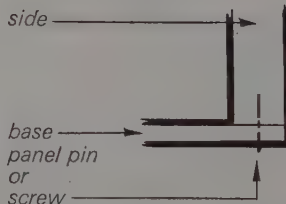


Lapped dovetail

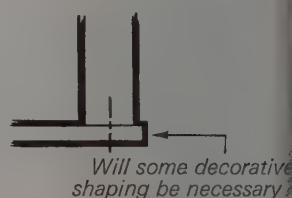
What length of dovetail will hold the end?



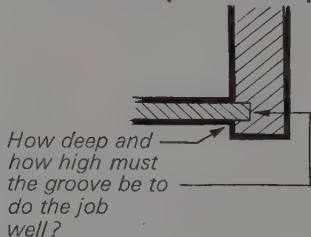
Flush base



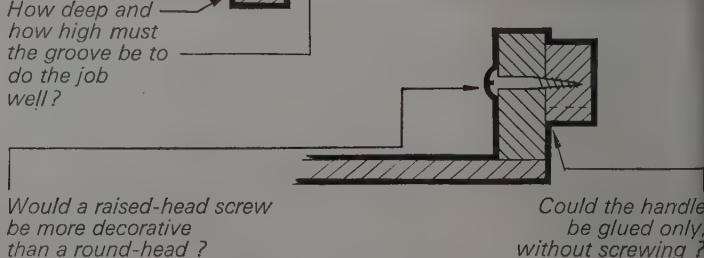
Overlapping base



Grooved base (used with lapped or mitred joints)



Handle screwed to the end



Research

(1) Do you wish to design a one-seater or two-seater sledge?

(2) Will you be lying or sitting or both?

(3) The main things to consider are the sides, seat and methods of steering and braking.

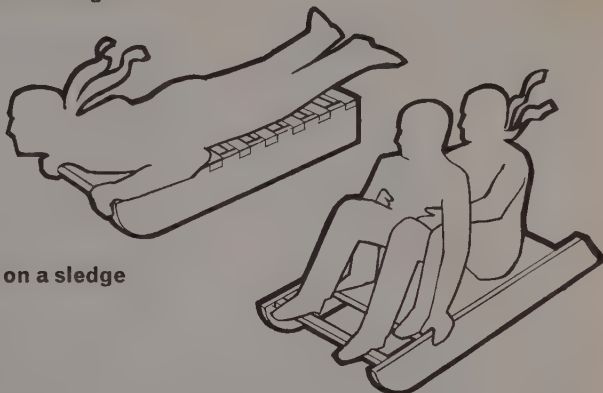
(4) A combination of wood and metal is frequently used in the construction of a sledge.

Note that as thin metal tubing is very susceptible to wear on the underside of the runners, a "sole-strip" should be added.

(5) To find out the approximate length and width needed, take measurements of yourself.

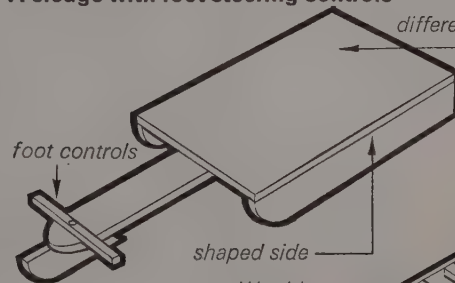
(6) Make sketches showing the sort of sledge you want to construct.

Lying on a sledge



Sitting on a sledge

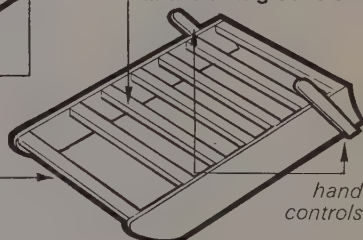
A sledge with foot-steering controls



Is there any important difference between a board seat and a slatted seat?

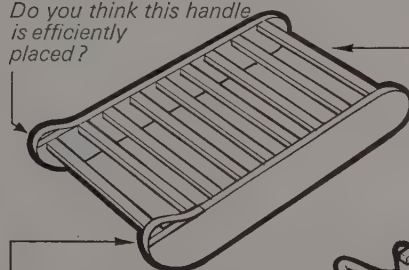
A sledge with hand-steering and braking controls

Would this be useful as a foot rest?

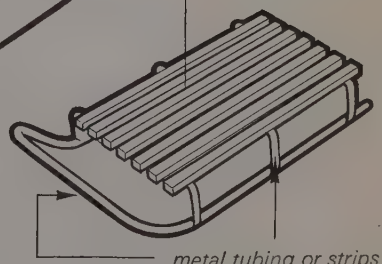


A sledge mostly in wood

Do you think this handle is efficiently placed?



Is it better to have slats crossways or lengthways?



A sledge mostly in metal

Full size drawings

- (1) Draw an outline plan on the floor in chalk and test it for size.

- (2) Draw the elevations, bearing in mind that a suitable shape must be provided for each end and sufficient height allowed for the sledge to clear small obstacles.

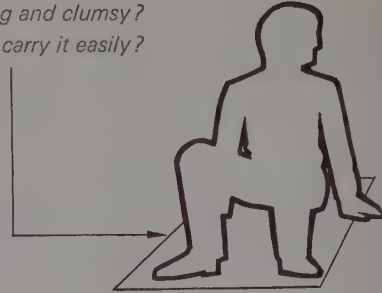
Metric conversion: $\frac{1}{2}$ " = 13 mm

- (3) Are the handles and controls efficient and comfortable?

- (4) Before proceeding to the working drawings consider the following questions carefully: Will the performance of your sledge be satisfactory? Is your sledge pleasing to look at?

Chalk outline

*Is it too big and clumsy?
Could you carry it easily?*



Side elevation

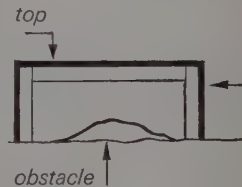
A slight curve downwards (about $\frac{1}{4}$ ") will greatly increase the speed. Why?

Why is this end curved?



*Need this be a square end?
What other shapes are possible?*

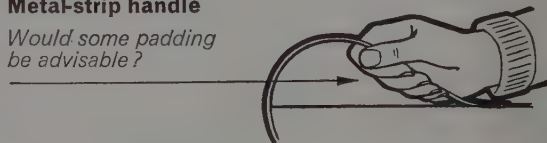
End elevation



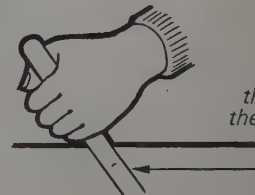
How high will the side need to be?

Metal-strip handle

Would some padding be advisable?



Hand-steering control



Which position for the pivot would give the greatest leverage?

Working drawings

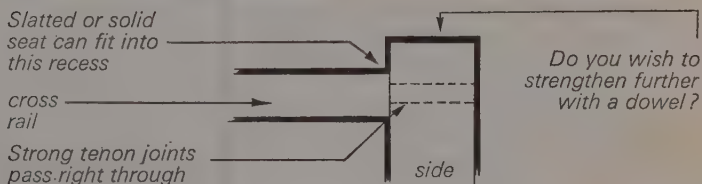
- (1) Choose a suitable scale and begin the drawing of the side elevation, end elevation and plan.
- (2) Mortise and tenon joints or screwing may be used in the construction. Which is the stronger? Why?

- (3) Why are metal runners a good idea?

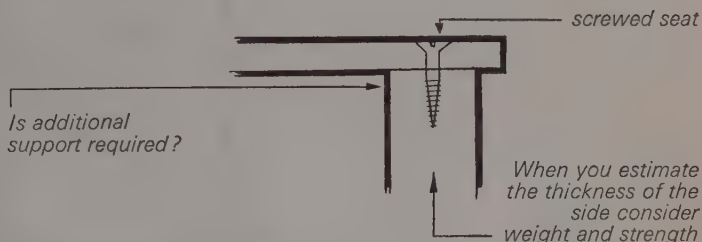
- (4) A cutting list is convenient to refer to when selecting your material. What advantage has hardwood over softwood? Choose a finish that will withstand outdoor conditions.

- (5) Check your drawing. Have you included title, scale, dimensions and your name?

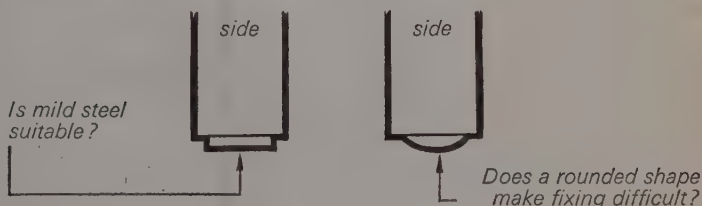
Mortise and tenon construction



Screwed construction



Different shapes of runner



Cutting list

Have you included extra length for the joints?

How much will you allow for planing?

<i>number</i>	<i>item</i>	<i>length</i>	<i>width</i>	<i>thickness</i>

Table lamps and standard lamps

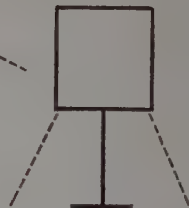
Research

- (1) What is the main purpose of your lamp? Is it for reading, for subdued lighting, or for a combination of these?
- (2) Using your rule, estimate the height most suitable for your purpose, but bear in mind the space needed for the bulb, bulb holder and shade. Note that, in the interests of safety, ventilation should be adequate. A bulb operating in a confined space builds up sufficient heat to become a fire hazard.

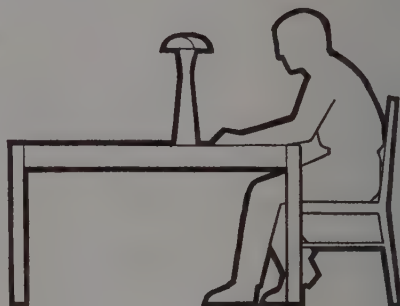
For reading



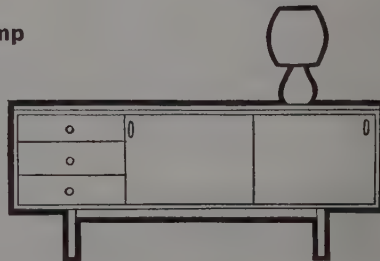
For subdued lighting



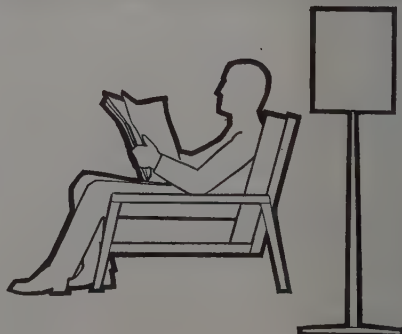
High table lamp



Low table lamp



Standard lamp suitable for reading and for subdued lighting



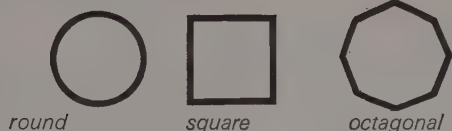
Looking at lamps in the workshop and elsewhere may help you to form your opinion about the lamp you are to make, but always remember the eventual room setting.

- (3) Consider some possible shapes for the column. Can you think of others in addition to those illustrated?

The round shapes are made on the lathe.

- (4) Which type of design illustrated here appeals to you? Consider also the size and shape of the shade you will use.

Sectional views



A one-piece design

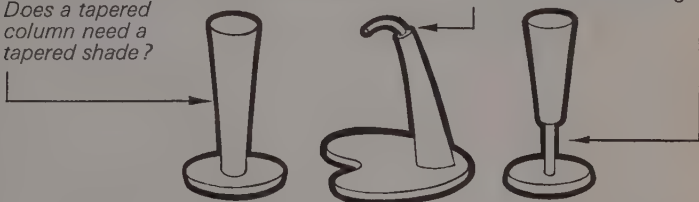
Would you choose a pronounced grain for this design?



A separate base and column design

Does a tapered column need a tapered shade?

Do you wish to introduce metal tubing?



A design of many pieces

column

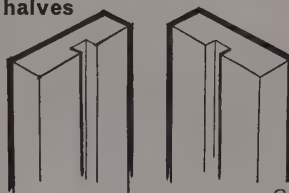
legs



Can you draw accurately this side view of the different coloured woods?

- (5) If long boring-tools are available a hole may easily be bored through the column for the wire flex. Another method is to groove and joint the column in two or more pieces.

A lamp column in two halves



Can this two-piece construction be incorporated into your design?

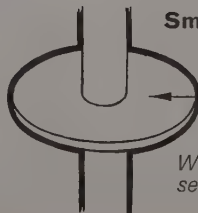
- (6) If you wish to turn a standard-lamp column on the lathe, remember that you will be limited by the distance between the lathe centres. Standard-lamp columns often need to be jointed in length.

Decorative band at the joint

How many beads do you consider necessary?



Small shelf at the joint



Would a shelf serve a useful purpose?

- (7) Sketch freely a number of designs with shades. Then develop the one that you like best. Try to experiment with new shapes, but remember that they must be functional and pleasing.

Full size drawings

- (1) Begin to draw the elevation and plan of your chosen design.
- (2) Keep the height and base in proportion and bear in mind the position of the shade. Can you think of different ways of making your lamp stable?

- (3) The width of the column at the top may determine the type of brass nipple to be used to secure the bulb holder.

Where do you want to put the switch?

Metric conversion: 1" = 25 mm

- (4) Alter your drawing until it is satisfactory.

Working drawings

- (1) Choose your scale and begin the drawing of the elevation and plan. Work from a centre line.
- (2) If the column is separate from the base show the joint.

- (3) If you are jointing standard-lamp sections, take care to allow sufficient thickness for the pin tenon and flex hole.

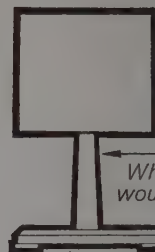
- (4) Show on your drawing the space for the flex from the top of the column to the outside of the base.

- (5) After checking your drawing add the dimensions, title, scale and your name.

Stability and proportion

Why is the widest point below the centre?
Could you recess a weight?

How heavy is the timber you intend to use?
How wide for stability?

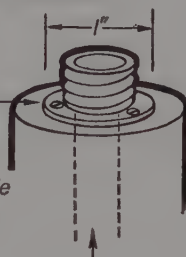


If feet are added the wire flex will pass between the

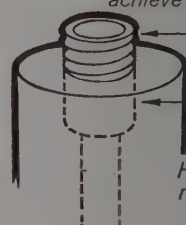
Fixings for the bulbholder

Why will these screws need to have countersunk heads?

What size of hole comfortably accommodates wire flex?



Will this type of nipple achieve a neater result?



How far will you need to screw here for a firm fixing?

Column and base joint

Would a slope be better here?

Many edge shapes can be devised for the base: but will they combine with the rest of the design?

Will you carry your joint through or part through the base?

Jointed parts of a standard-lamp column

Is the joint wide enough not to be weakened by the flex hole?

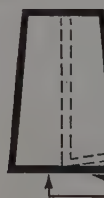


How much depth is required to allow sufficient gluing area?

Too little strength here may result in splitting

Positioning of flex

Is the wood likely to break away here?



Do you wish to cover the base with felt?

Research

- (1) What do you wish to keep in your bowl—fruit, nuts, sweets, or other items? How will your choice affect the size and shape of the bowl?
- (2) Using your rule, estimate the approximate diameter and height required. You may find it helpful to measure other bowls when making your estimate.
- (3) If the timber supply is limited, you may need to check that the material you require is available before proceeding. Only certain timbers are suitable for salad bowls. Why?
- (4) You may use contrasting woods, glued together, but try to make the parts bear some relationship to the general shape.
- (5) The external shape may be concave, convex or flat in outline.

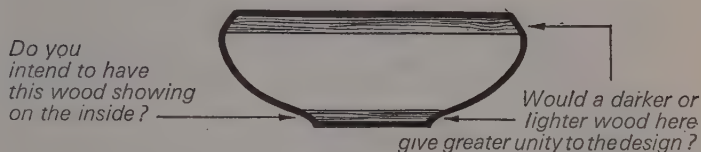
Two internal shapes are illustrated. Are there others? Try to make the internal and external shapes harmonize with each other.

- (6) Many edge shapes are possible, too. When working out a shape for the edge of your bowl remember that a thin edge is liable to chip.

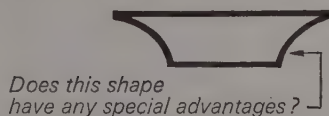
Bowl dimensions



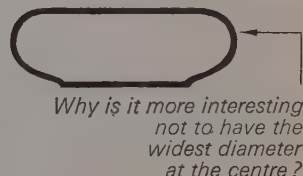
A bowl in contrasting woods



Concave outline



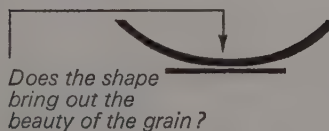
Convex outline



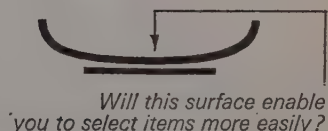
Flat outline



Smoothly rounded



Almost flat



Edge shapes



Can you think of others?

(7) Why do some bowls need a lid?

(8) Think of the purpose of the base. Is it wide enough for stability? Is it in harmony with the shape of the bowl?

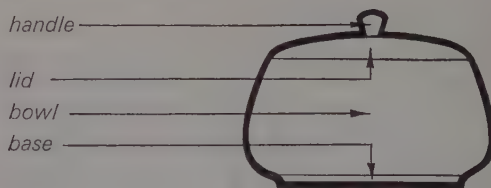
(9) Make freehand sketches and elevations of a number of bowls before deciding upon the one you wish to develop.

Full size drawings

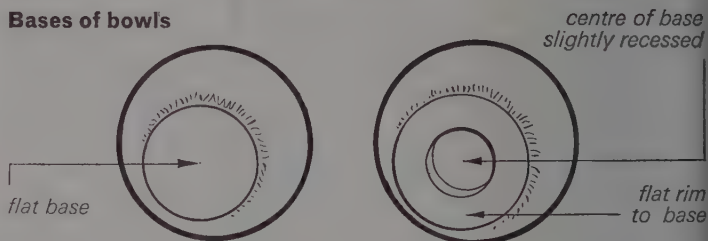
(1) Draw out several variations of your design, showing the inside with a thin broken line and the outside with a continuous thick line.

(2) You may be able to create a better shape by cutting freely, without a line, from a folded card.

A bowl with a lid



Bases of bowls



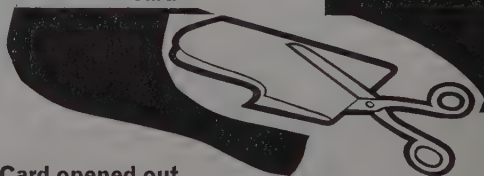
A bowl in elevation



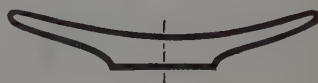
(A) Thin card prepared to bowl size



(B) Cutting a bowl section from the folded card



(C) Card opened out



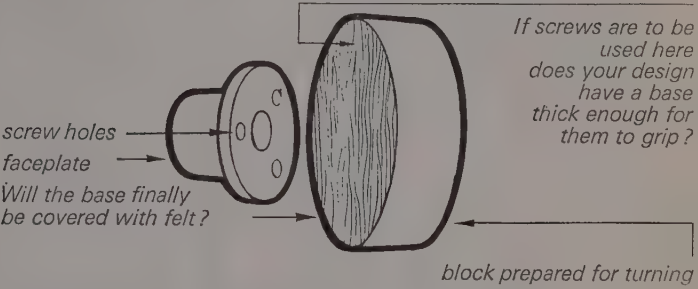
(3) The beauty of a bowl lies in its form and proportion, the colour and texture of the grain, and the finish imparted. Any decoration used must enhance this beauty and not detract from it. Can you think of woods with interesting grain that would need little or no decoration? Are there woods of dull grain that might need lively treatment?

(4) Have you discovered any methods yet for fixing the bowl to the faceplate of the lathe?

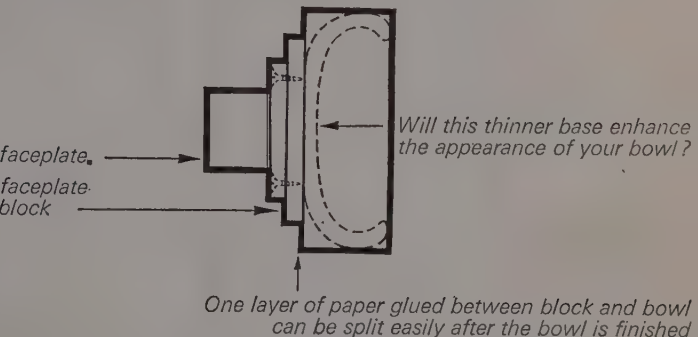
Decorated bowls



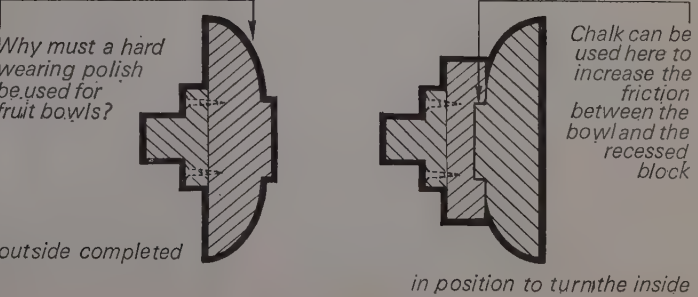
Faceplate and wood ready for assembly



Glued paper and block method for holding a bowl



Advanced turning



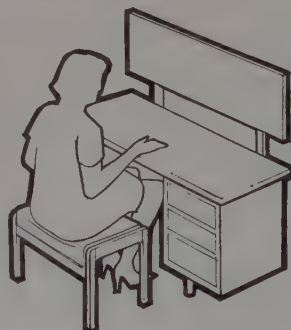
Working drawings

For practical work the full size drawing or cut-out is usually sufficient. But if a more permanent record is required, orthographic projections may be drawn to scale. Don't forget to add your name.

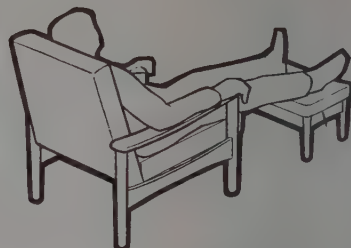
Research

- (1) Stools may be used in many ways. Some uses are illustrated here. Can you think of more?
- (2) First decide upon the purpose of your stool, then determine its height. If possible, go to the place the stool will finally occupy and sit on objects of varying heights to help you make up your mind about the height you want.
- (3) By experiment and observation estimate the length and width required for comfort.

At the dressing table



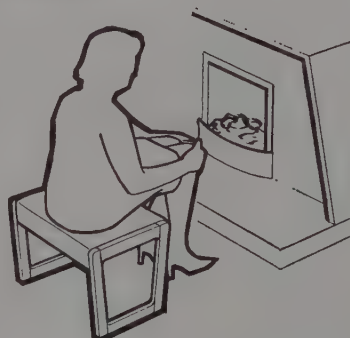
For resting the feet (low)



In the kitchen (high)



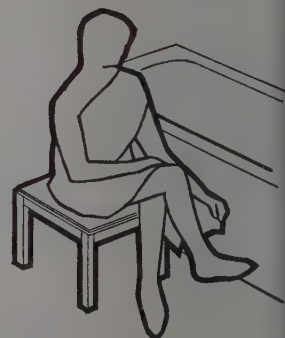
By the fire



At the piano



In the bathroom



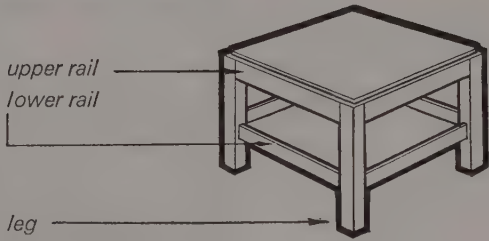
(4) The tops of stools are usually supported by legs held steady by rails. What is the advantage of using upper and lower rails? Is there a disadvantage as well?

(5) Sometimes the seat is hinged to reveal a compartment.

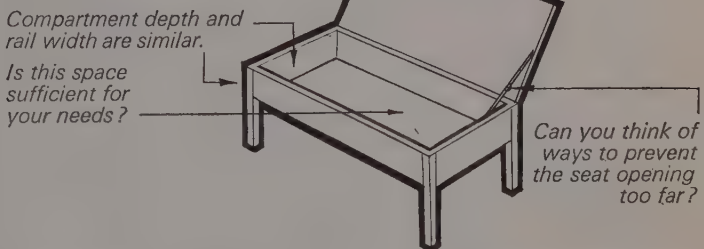
(6) Consider the various types of stool top. Three are illustrated.

(7) Sketch a number of designs before making your final choice.

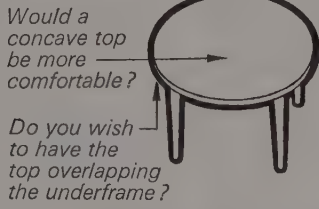
Stool with lower rails



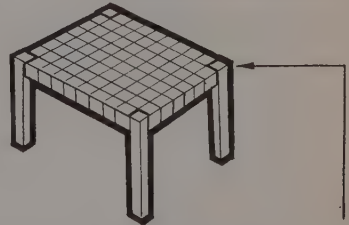
Stool with hinged seat



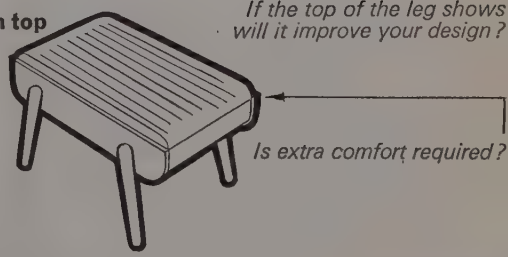
Wooden top



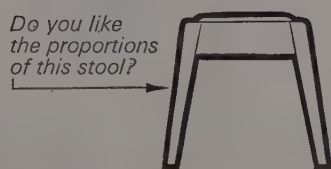
Woven seagrass top



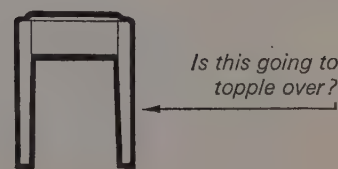
Upholstered foam top



Side elevation



End elevation



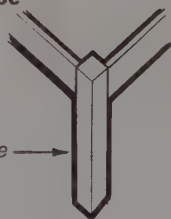
Full size drawings

- (1) Begin the drawing of the side and end elevations.
- (2) Pay particular attention to the overall proportion and to stability.

- (3) Legs must be large enough at the top to take a strong joint. The actual width of leg depends, of course, on the size of stool and the construction employed, but frequently $1\frac{1}{4}"$ to $1\frac{1}{2}"$ (32 to 38 mm) is suitable for a square leg and $\frac{7}{8}" \times 1\frac{3}{4}"$ to $2\frac{1}{4}"$ (22 x 44 to 57 mm) for a rectangular one. Look at the diagrams showing leg shapes and sections. Can you think of other possible shapes and sections?

Parallel leg shape

What effect will this have on the appearance of the stool?



Tapered leg shape

Will you taper from underneath the rail?



Leg sections

round



square



rectangular

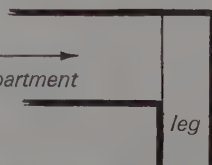


- (4) A number of rail variations are possible.

Note that the proportion of the spaces between the rails and the legs is as important as the proportion of the rails and legs themselves. The mortise and tenon joint is most frequently used here but other joints are possible. Although strength is vital, try to avoid a clumsy appearance.

Wide upper rail

rail wide enough for a compartment



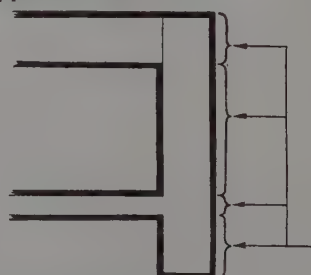
leg

Medium upper rail

a combination of strength and pleasing appearance



Narrow upper and lower rails



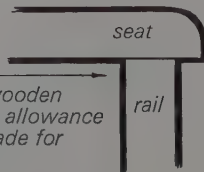
Narrow rail possible because an extra rail is used below

Try different sizes and rail positions in order to achieve interesting and harmonious areas

- (5) Consider the construction of the seat. Will it overlap the rail, or fit into a rebate? What other method of construction can you think of?

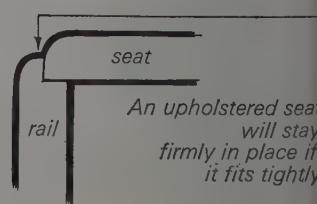
Seat overlapping the rail

If a solid wooden top is used allowance must be made for shrinkage



Seat fitted into a rebate

An upholstered seat will stay firmly in place if it fits tightly



- (6) Imagine yourself using the stool. Have you forgotten anything?

Working drawings

- (1) Choose a suitable scale and begin the drawing of the side elevation, end elevation (or sectional end elevation) and plan.
- (2) Arrange the tenons according to the width of the rail.
Don't forget to show the position of the tenons on the plan.

- (3) Lower rails may also have tenon joints. You may need to use your text book if other joints are required.

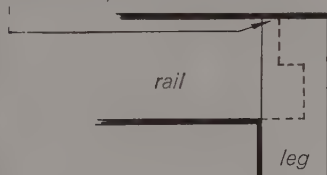
- (4) If a compartment is to be made, show the groove for the bottom of it.

- (5) Do you want to make an upholstered seat? The accompanying diagrams suggest two ways of doing this. Other methods are also satisfactory (see page 58). Note that the thickness of foam or other upholstery material required will depend upon the nature of the underlying surface.

- (6) When deciding upon the type of wood and finish to use, remember the purpose of the stool and its room setting.
- (7) See that dimensions, title, scale and your name are marked on your finished drawing.

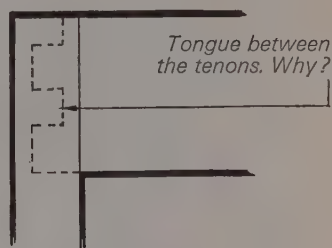
Single tenon

Will the top cover this haunch?



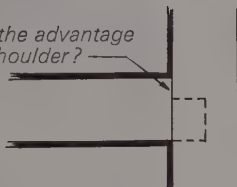
Double tenon

Tongue between the tenons. Why?



Lower rail joint

What is the advantage of this shoulder?



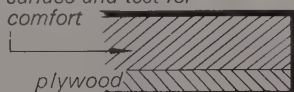
Part-sectional view of stool corner



How high will this bottom need to be placed to prevent it from breaking out?

Upholstering a solid seat base

Place various thicknesses of foam on a hard surface and test for comfort



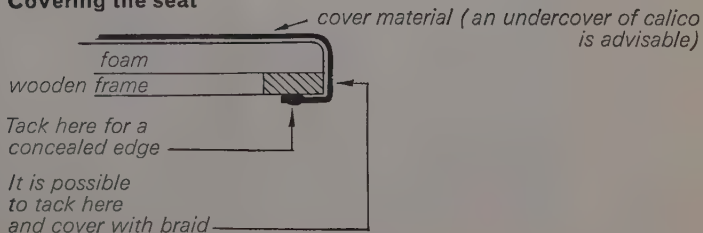
Upholstering a framed seat base

This clip is used to secure end of the rubber webbing



Why is the corner of the framework rounded off?

Covering the seat



Research

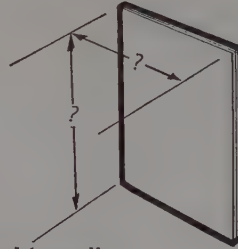
- (1) Make measurements of magazines that are to be kept in the rack.
- (2) When considering the quantity of magazines to be stacked, remember that a rack is for magazines in current use. For more permanent storage a larger piece of furniture is required.
- (3) Now consider the following questions and try to form an opinion on the design of a magazine rack:
What will its position be?

How will it be used? Will it be combined with another piece of furniture?

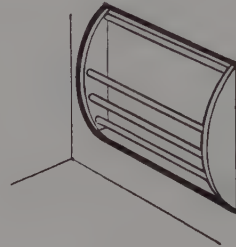
Will it have a dual function?

Will different materials be incorporated in it?

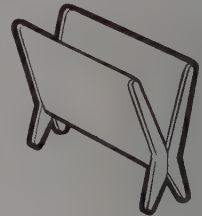
Height and width of magazine



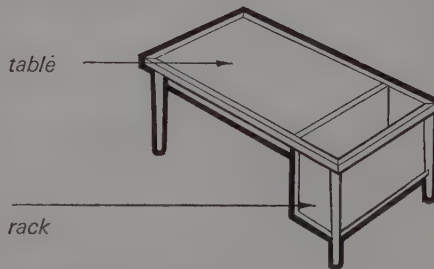
Rack attached to wall



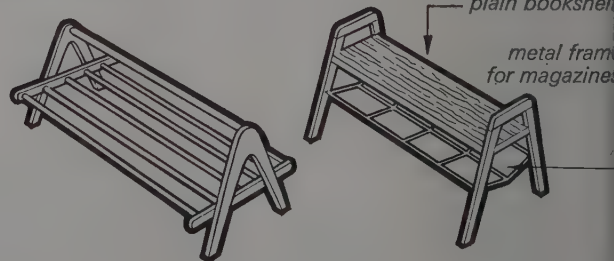
Rack to stand on floor



Combined with a table



In the form of a table



What supports will it have?

How will side support be given for magazines placed on edge? Three methods are illustrated.

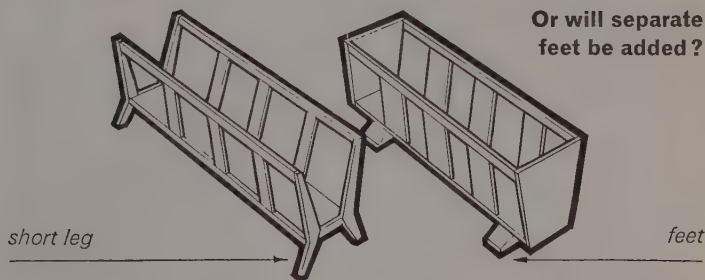
- (4) Sketch a number of ideas before making your final choice. Take care not to make your design look clumsy.

Full size drawings

- (1) Begin the drawing of the side and end elevations.
 - (2) It may help if you place a magazine on your drawing when working out overall sizes.
- (3) Next, consider the stability from the end elevation.

Will the legs form part of the end?

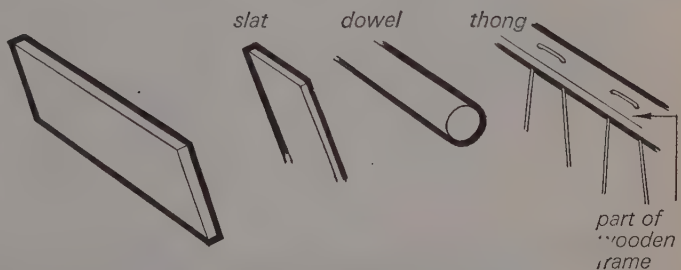
Or will separate feet be added?



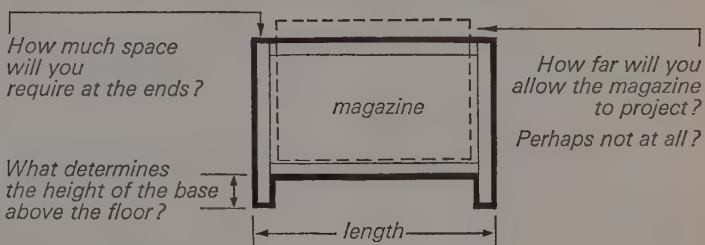
A solid panel

Slats or dowels

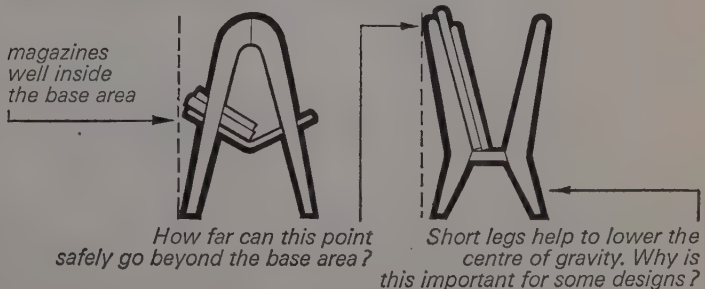
Thonging



Working out the size of the rack from a magazine



Which of these designs is the more stable?



- (4) Have you compared the advantages of different methods of supporting magazines?

- (5) Experiment with different positions for the slats, dowels or thongs in order to obtain interesting spacing. Many groupings are possible, in vertical and horizontal arrangements.

Working drawings

- (1) Decide on a suitable scale and draw the side elevation, end elevation and plan.
(2) What will the main construction be?

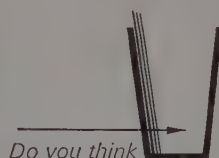
- (3) For most dowels and slats the strength of the joint may be increased by using a shoulder.
(4) You may need to refer to your 'text book for details of other joints.
(5) Complete your drawing and include dimensions, title, scale and your name.

Parallel sides



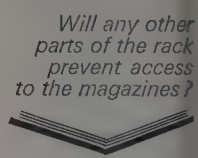
Will the magazines support themselves without bending?

Sloping sides



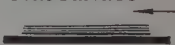
Do you think congestion would result at the bottom?

Wide-angle sides



Will any other parts of the rack prevent access to the magazines?

Flat surface



Would you be able to select the lower ones easily?

Will the magazines slide off?

Oblique



thonging

Alternate thick and thin equally spaced



slats

Groups of two



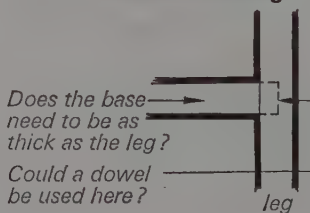
slats

Groups of two and three



dowels

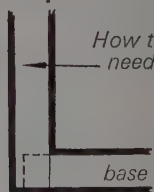
Base tenoned into the leg



Does the base need to be as thick as the leg?

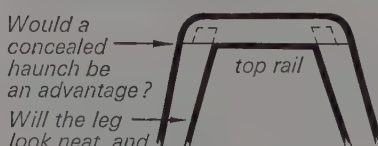
Could a dowel be used here?

Base lap-dovetailed into a solid end



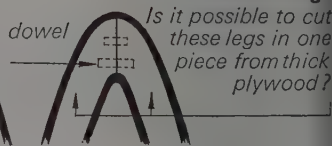
How thick will a solid end need to be to allow for a lapped dovetail?

Tenoned end or side frame



Would a concealed haunch be an advantage?

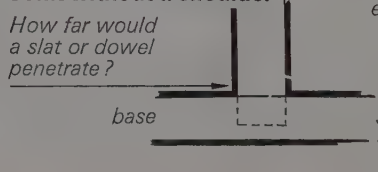
Will the leg look neat, and still be wide enough for a strong joint?



Dowelled legs

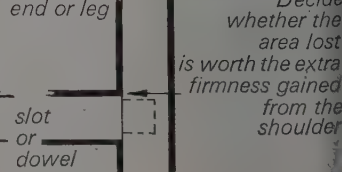
Is it possible to cut these legs in one piece from thick plywood?

Joint without a shoulder



How far would a slat or dowel penetrate?

Joint with shoulders



Decide whether the area lost is worth the extra firmness gained from the shoulder

Research

- (1) A firescreen is used to provide a decorative covering for a fireplace when the fire is out. Measure the fire opening you intend to screen.

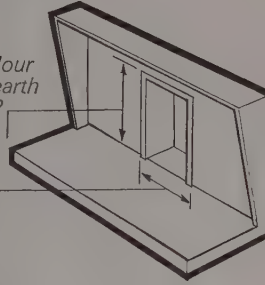
- (2) Consider possible types of firescreen. Can you think of others in addition to those illustrated here?

Measuring the fire opening

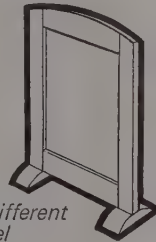
Will the shape and colour of the fireplace and hearth influence your design?

height

width

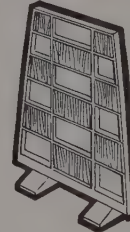


Frame and panel



How many different types of panel can you discover?

Alternate spaces and panels



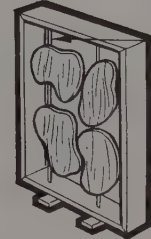
What other geometric shapes could you use?

Veneered plywood



Why are the panels of different widths?

Suspended shapes



metal rod

Open shelving



Do you wish to include flowers or ornaments?

Abstract



Does this form suggest a link with fire?

See design programme on sculpture

- (3) How will you make the firescreen stable?

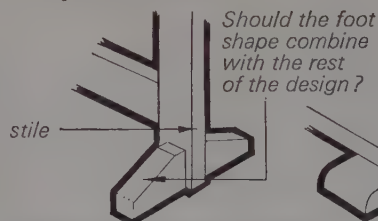
- (4) Draw sketches of a number of firescreens until you discover one that suits your requirements.

Full size drawings

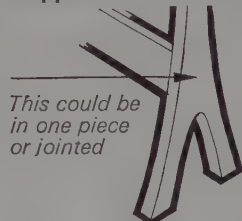
- (1) Begin to draw the front and end elevations.
- (2) In framed firescreens the rails are often wider than the stiles. Why? Is it for shaping, or for stronger joints, or for providing a handle? Are handles necessary?
- (3) Try to make spaces, shapes and veneer patterns interesting and well balanced.
- (4) The framework must be sufficiently thick to allow for a good joint and yet not look too heavy.

- (5) When calculating the size of the feet, solve problems of stability by experiment.

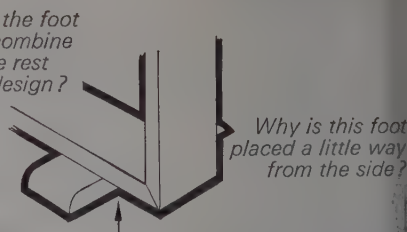
Foot jointed to stile



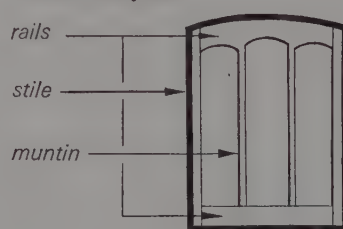
Supports in the form of legs



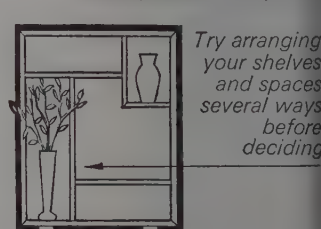
Foot added to base



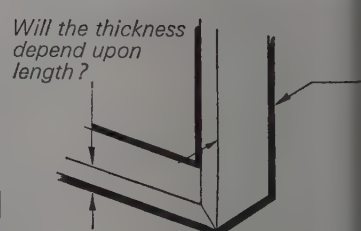
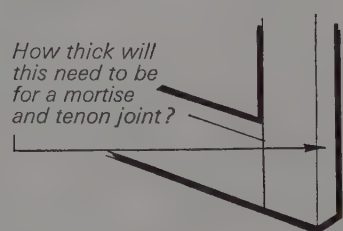
Frame and panel



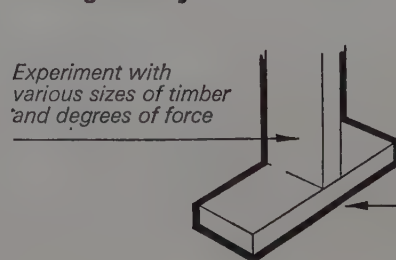
Arrangement of spaces



Flat frame



Testing stability



Is this wide enough for small pots?

Fix with a nail or screw

Working drawings

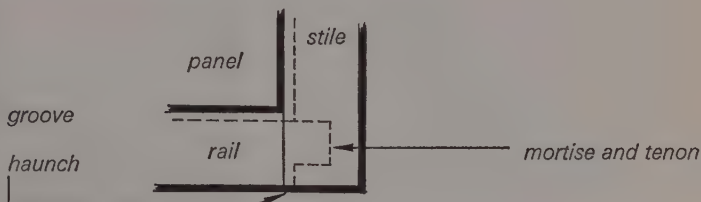
- (1) Using a suitable scale, begin to draw the front elevation, side elevation and plan.
- (2) The mortise and tenon joint is often used for flat framework.

With box framework, dovetail joints would be usual at the corners but other joints are possible.

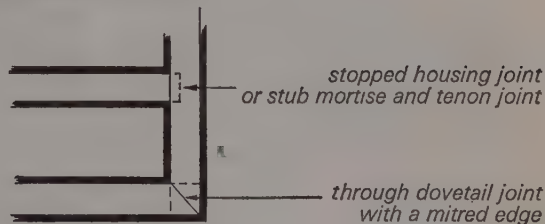
- (3) Feet are sometimes attached by means of a bridle joint or by screwing.

- (4) Check your drawing to see that you have included all details, particularly dimensions, title, scale and your name.

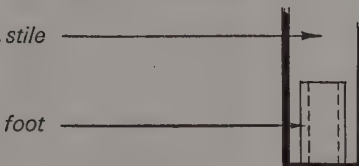
Front elevation of flat framework



Front elevation of box framework



End view of foot bridle jointed

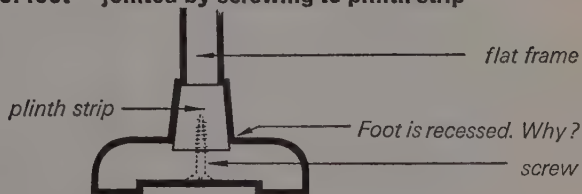


Side view of foot — screwed to box frame

Would it be stronger to screw downwards into the foot?



Side view of foot — jointed by screwing to plinth strip



Research

- (1) Consider the room setting in which the coffee table is to be placed. How much space is available? What is the style of the surrounding furniture, particularly the legs? What is the colour scheme and the chief wood used?
- (2) A coffee table usually consists of a top supported by legs and rails.

For medium and large coffee tables the four-legged construction is usually the best. Why? Sketch a number of shapes for table tops until you find one that is pleasing.

- (3) The underframe may include additional features.

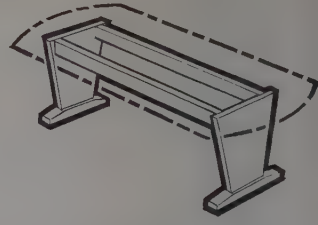
Sketch different underframings for your top, but try to have a purpose behind each idea you put forward.

- (4) Sit in an armchair and measure a suitable height for the table. Is this the only consideration affecting the height?

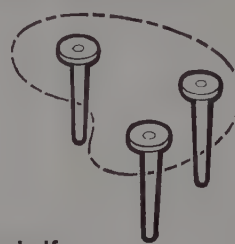
One leg (with rails and feet)



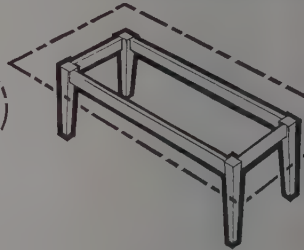
Two legs (with rails and feet)



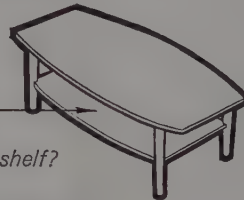
Three legs (with blocks and a plywood top)



Four legs (with rails)



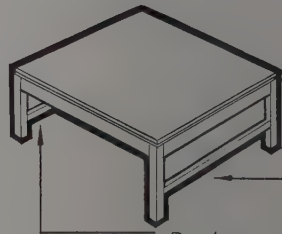
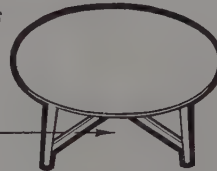
A table with a shelf



What will be placed on this shelf?

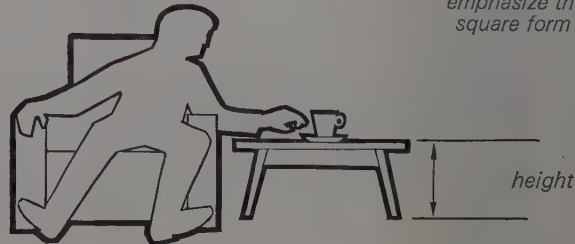
Tables with lower rails

Do these rails increase the strength?



Do these rails emphasize the square form?

Estimating the height of the table



height

Full size drawings

- (1) Draw the plan, and the elevations that give most information about your chosen design.
- (2) See that the proportions of length, width and height are good.

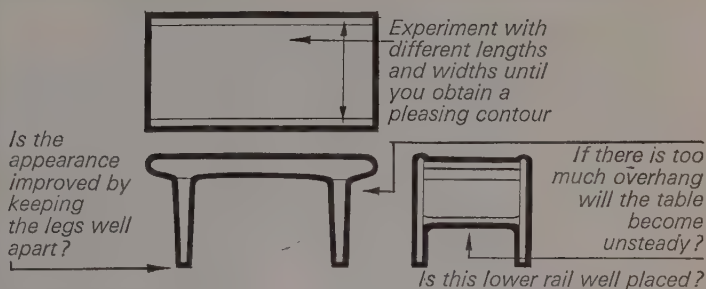
- (3) Whether legs are splayed or vertical, the most important requirement is good stability.

- (4) The section through the leg must harmonize with the general form of the table. What shapes other than those illustrated can you think of?

- (5) Consider the possible edge shapes for the top. Six are shown here. Sometimes tops are tiled or made in glass.

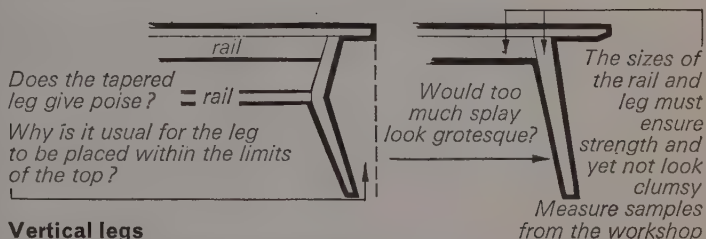
Why is it important to bear in mind the usual viewing angle when designing edge shapes?

Judging the form and proportion (third angle projection)

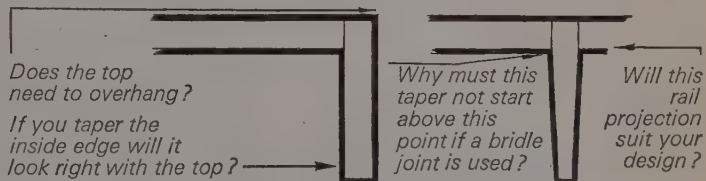


Splayed legs

Try other positions to vary the spaces



Vertical legs



Round leg

A round leg is turned on the lathe

When corners are rounded why must the rail be set in?

A square leg can be splayed in two directions

Square leg

Rectangular leg

Does the long side usually face the front? Why?

Table tops



Working drawings

- (1) Draw the elevations and plan to a suitable scale.
- (2) What joints do you propose to use? If you are unsure about constructional details, refer to your text book.

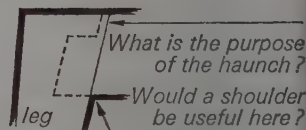
Haunched mortise and tenon joints (third angle projection)

(suitable for tables with four legs)

Why are the ends of these tenons mitred?

Does the tenon start far enough from the end to prevent splitting?

Should the tenon be a third of the thickness of the rail?



What is the purpose of the haunch?

Would a shoulder be useful here?

Round leg with wedged pin joint (suitable for tables with three or four legs and a plywood top)

Why is a wedge used?

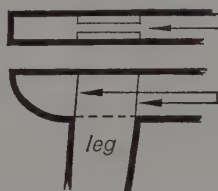
Does this shoulder give extra strength?



Bridle joint (suitable for tables with four legs)

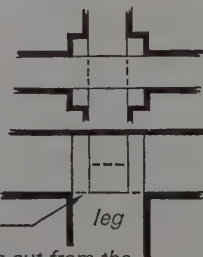
Is a third of the rail thickness suitable here?

Could these edges taper towards the top?



Combined halving and bridle joint (suitable for tables with one leg)

If too much is cut from the middle of the leg, what is the likely result?



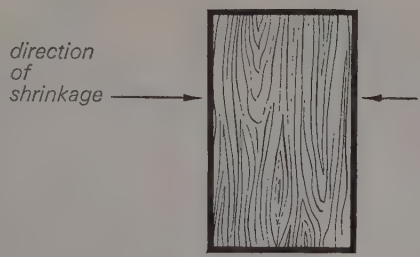
(3) How is the top to be fixed?

- (a) If solid wood is used, allowance should be made for movement. Why? (See page 77.)
- (b) If plywood or laminboard is used, no movement allowance is required.

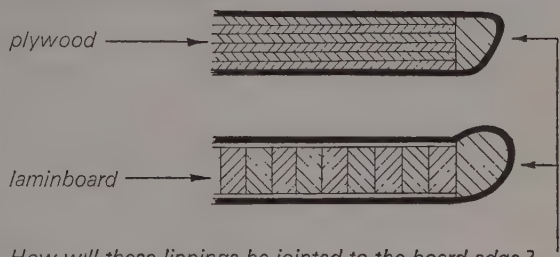
Manufactured boards have edges that should be covered with a lipping. Why?

Narrow boards often need to be jointed together to produce a good wide surface. Try to use the method most suitable for your type of table.

Solid top



Manufactured boards

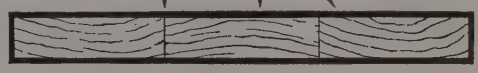


How will these lippings be jointed to the board edge?

Jointing narrow boards

With these glued butt joints will it be necessary to use pressure?

Will the counteracting direction of the annual rings reduce the effect of warpage?



Do you need the extra strength given by inserting dowels across the joint?



These annual rings are at right angles to the boards surface. Why does this reduce warpage?

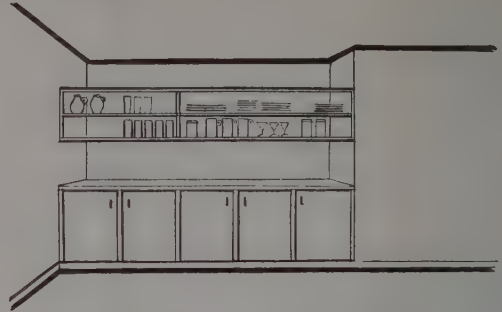
(4) When choosing a polish for your coffee table, remember that resistance to hot liquids is important.

(5) Complete your drawing and see that you have included dimensions, title, scale, cutting list and your name.

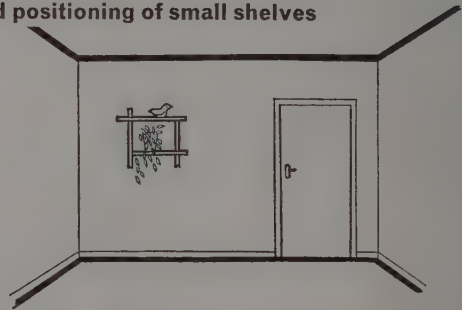
Research

- (1) Consider two basic forms of shelving: first, the filling of a space almost completely with shelves and, secondly, the positioning of a small section of shelving on a larger wall surface.
- (2) From the wall space available estimate approximately the area that the shelving could occupy.
- (3) Make a list of the articles that might be placed upon the shelves. Consider their weight and take measurements.
- (4) Consider all the possible constructions for wall shelving, which range from enclosed box types to completely open forms. Six constructions are illustrated here.

Shelves fitted between two walls

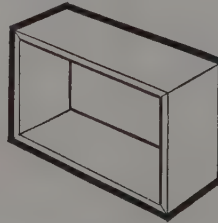


Balanced positioning of small shelves



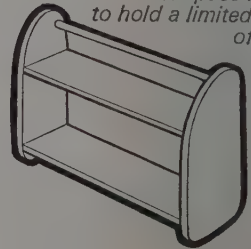
Box type

Could you link several of these?

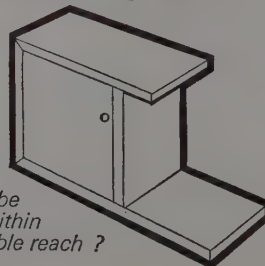


Extended sides

Is this space intended to hold a limited number of books?



Combined with a cupboard



Will this be placed within comfortable reach?

Formed laminations



Many shapes are possible with this construction

- (5) Make preliminary sketches of the kinds of shelving that will suit your purpose. Try to vary the spacing of the shelves to achieve variety and interest.

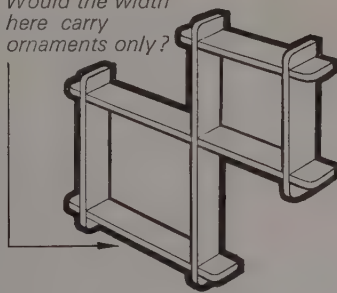
Full size drawings

- (1) Begin to draw the front and end elevations of your shelves.
- (2) The shelves may form part of a boundary of rectangular space. Try to make these rectangles pleasing. A good proportion for a rectangle is 5:8, but many other proportions are possible. The relationships of the rectangles shown opposite may also be applied to open-type shelving.

- (3) The ends of the shelving should be pleasing in themselves but should also bear a relationship to the design as a whole. Make several drawings.

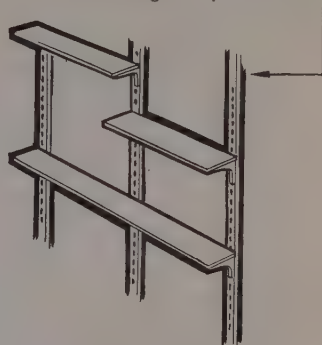
Crossed corners

Would the width here carry ornaments only?



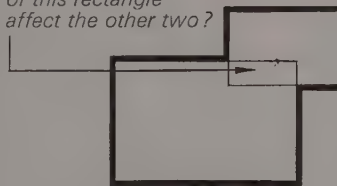
Open shelving

Will metal supports look right in your room?

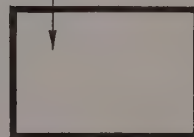


Linked

Will the shape of this rectangle affect the other two?



Although different in size, should these rectangles have the same proportions?



Separated



Enclosed

Is interest created by placing the supports away from the centre?

Plain end

Could the dowels be used to support light shelves?

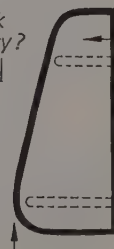


Is a back necessary?

Shaped end

Is this narrow width only suitable for ornaments?

Does this shape give a continuity of outline?



Can you think of other forms?

Working drawings

- (1) Begin to draw, to a suitable scale, the front elevation, end elevation and plan.
- (2) Thicknesses will depend upon the length of the shelves, the weight of the objects to be placed upon them, and the jointing to be used. Experiment to find the right thickness. The thinnest board that will do the job well is usually the neatest and best.

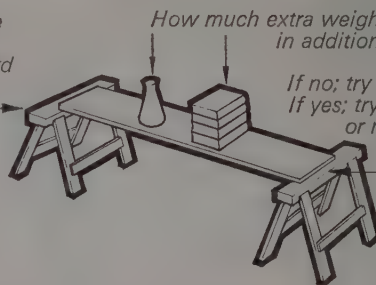
- (3) Select the joint most suitable for your design. The joints shown opposite are not the only ones possible. Can you think of others?

- (4) The shape of the edges should form a satisfactory combination with the design of the shelving as a whole.

- (5) Before removing your drawing from the board, make sure that you have included the hidden details, dimensions, title, scale and your name.

Estimating the thickness of shelf

Approximate size of shelf. Test to see if the board is flat before you start



Place objects in position

How much extra weight will you allow in addition to the normal? Any sag?

If no; try a thinner board. If yes; try a thicker board or reduce the span

Stopped housing joint for extended sides

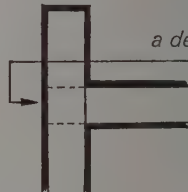
(front elevations)

Why does this joint need to be shallow?



Through tenon joint for extended sides

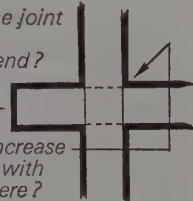
Will this have a decorative effect?



Half lap joint for crossed corners

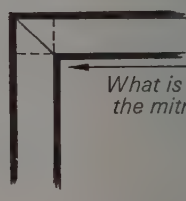
Why must the joint be kept well clear of the end?

Could you increase the strength with a shoulder here?



Through dovetail joint with a mitred front

What is it that makes the mitred front pleasing?



Edge shapes

Is it likely that this would suit a design with curved parts?



Would this be suitable for a design with crossed corners?



Does this always make a thick board appear thinner?



With a spare piece of wood and a plane experiment on other possible edge shapes

Research

- (1) Sculptural forms should have a liveliness that gives pleasure to the senses of sight and touch. This is the main consideration in the designing of sculpture: it does not, like furniture, have to do a job as well. Sculpture may represent an object or a living thing. It may also express feelings in an entirely abstract way.

- (2) Inspiration and Ideas for suitable pieces of work can readily be found in nature and in the world around us. Observe carefully living creatures and plants, the movement of cloud and water, and objects of all kinds. Try to simplify the forms and shapes you observe by picking out their important features, and then express those features in a way that pleases you.

- (3) The surface of sculpture is often made smooth, but other textures may be used to enhance the concept you are trying to express.

Representational sculpture

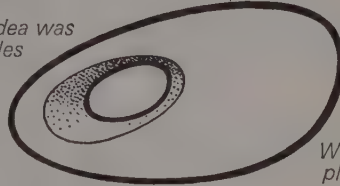
Are details needed? Can the impression be given without them?



Could the bird be made steady without a base?

Abstract sculpture

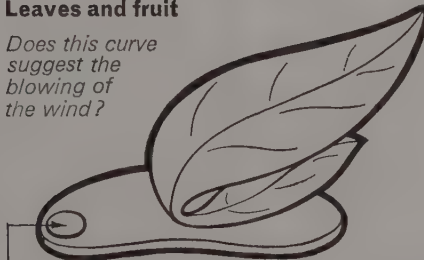
Do you think this idea was suggested by pebbles on the sea shore?



Would this form be pleasant to touch?

Leaves and fruit

Does this curve suggest the blowing of the wind?



Could emphasis be given here for a balanced effect?

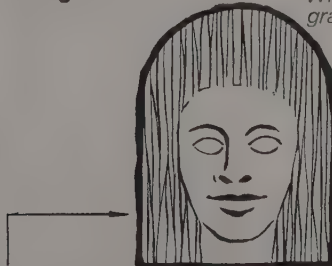
A drop of water



Why is it rounded and fatter at the lower end?

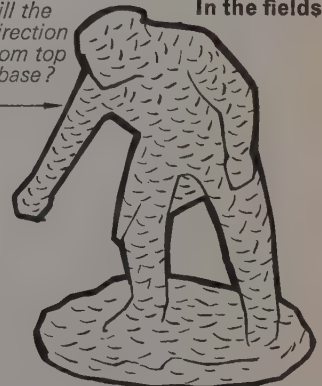
Straight hair

Why will the grain direction be from top to base?



Are these deep gouge cuts suitable for long hair?

In the fields



By leaving tool marks do you further the idea of work in the fields?

(4) Mild working woods like pine, poplar, obeche and lime, are suitable for beginners, especially when the rasp is the principal tool used. The more expensive woods (e.g., walnut, teak, cherry, mahogany, pear) can be tried later. Many interesting effects are achieved by mixing different types of wood in the same sculpture.

(5) Draw on paper a number of sketches of sculptures. Be prepared to experiment with new ideas. Sometimes the block of wood is an interesting shape and this will itself suggest something to you.

Full size drawings

(1) Drawings can be made of several views of the proposed sculpture, but more useful is the clay model. A vivid impression of the shape and form is quickly achieved with a clay mock-up. Have your block of wood near to hand so that you can get ideas from the grain formation, and so that you keep within the required dimensions.

(2) Most sculptures will be looked at from all sides. Keep this in mind when considering such elements of design as balance and stability, rhythm and unity, light and shade.

(3) Draw the outline of your sculpture on the block of wood, or shade in the main areas to show the limits of your design.

Working drawings

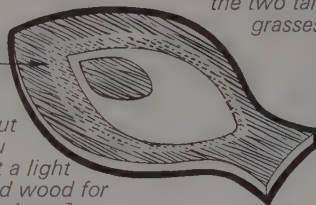
These are not normally required. But see that you put your name on any sketches you have drawn. As you gain experience you may prefer to work straight onto the wood without preliminary sketches.

Practical procedure

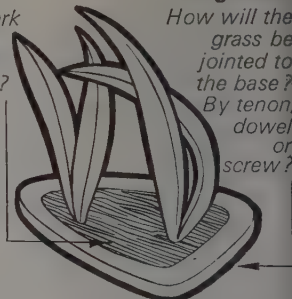
Work all the main areas first and then turn to the detail. Be prepared to make changes as you proceed, especially if advantage can be taken of the grain as it is uncovered. Use saws, gouges, chisels and rasps first; then scrapers, rifflers and glasspaper. When using gouges and chisels cut at a slight angle to the grain to avoid splitting the wood. Finish your work with just enough polish to bring out the beauty of the wood.

Fish

If this is walnut can you suggest a light coloured wood for the next layer?



Does this dark wood link the two tall grasses?

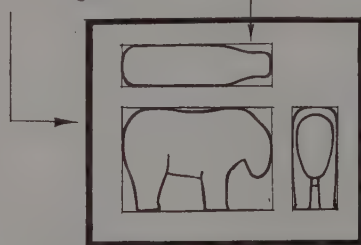


Tall grasses

How will the grass be jointed to the base? By tenon, dowel or screw?

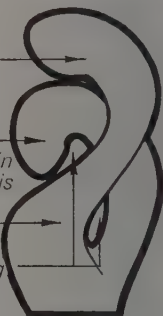
Dog (drawing in third angle projection)

Which direction would be suitable of shaping is necessary for the grain?



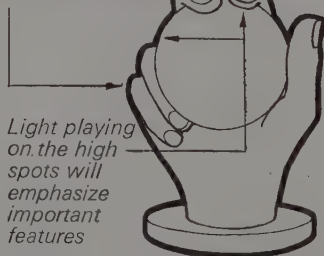
Think in terms of the main form at this stage

Can the enveloping effect be obtained without holes?



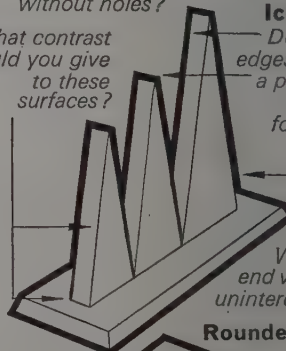
The bowler's hand

Does this appear firm and stable?



Light playing on the high spots will emphasize important features

What contrast could you give to these surfaces?



Icebergs

Do these edges create a pleasing rhythm for you?

Will this end view be uninteresting?

Rounded form

Could this piece be held in the vice and cut off later?

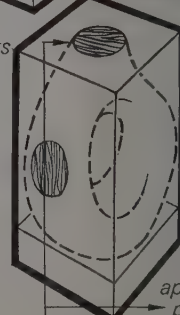
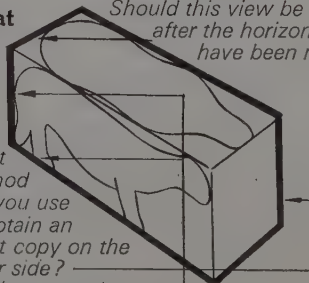
Shade in chalk approximate position of the main external areas

Stoat

Should this view be drawn after the horizontal cuts have been made?

What method will you use to obtain an exact copy on the other side?

Is it best to make your shape fill the block?

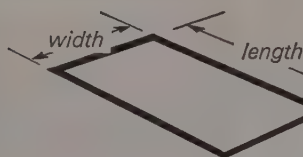


Research

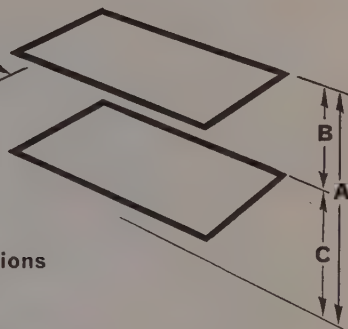
- (1) Estimate the length and width suitable for the trays, bearing in mind the objects to be carried. If you wish, measure cups, saucers and plates. Some rectangles will look more pleasing than others. Why?
- (2) Three height measurements are important: (a) height of top tray for convenient use, (b) sufficient space between trays for removal of crockery and (c) height of lower tray, so that it is clear of dust and feet.
- (3) The trays are most frequently supported by long vertical legs at each corner, with horizontal rails between. Occasionally long and short legs are used, and sometimes crossed legs. With thicker plywood trays less support is required from the rails.

Which of the diagrams opposite shows the most robust type of construction?

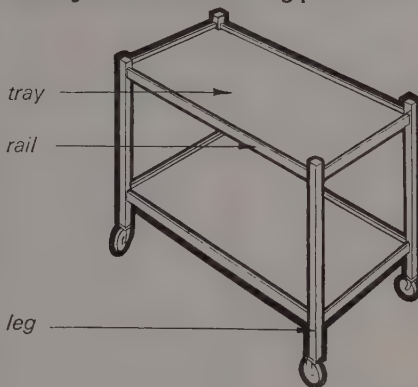
Estimating size of tray



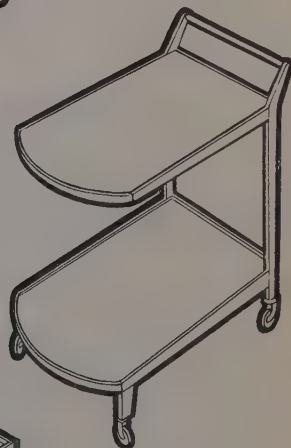
Measuring tray heights



Trolley with traditional leg positions



Trolley with long and short legs



Trolley with crossed legs



- (4) Additional features may be incorporated into the design:
 - (a) handles—are they going to serve a purpose?
 - (b) drawers—for holding what? Will movement affect the contents?
 - (c) removable trays—what advantage have these?
- (5) Make sketches of several different designs of trolley before deciding upon the one you wish to construct.

Full size drawings

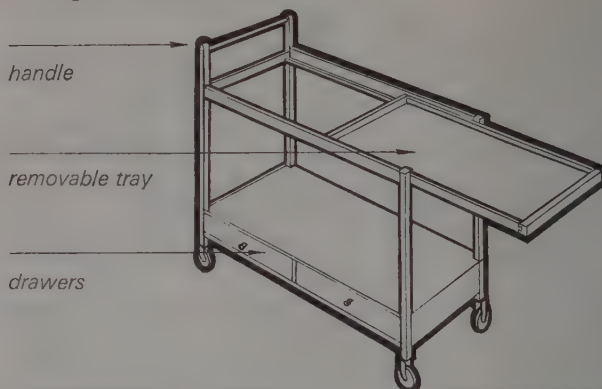
- (1) Begin the drawing of the side and end elevations of your trolley.
- (2) View the elevations thoughtfully. Are the proportions good? Will the trolley have stability under normal conditions?
- (3) Leg-section dimensions may vary from $1" \times \frac{3}{4}"$ to $1\frac{3}{4}" \times 1\frac{3}{4}"$ (25×19 to 35×35 mm) and should be shaped to combine with the overall design.
- (4) Sometimes a leg is tapered or a rail is curved. What is the purpose of this?
- (5) Experiment and try to improve your design until it is really pleasing and functional.

Working drawings

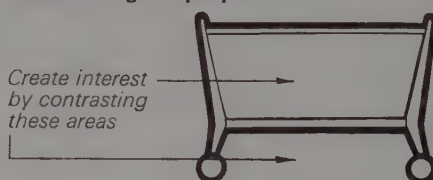
- (1) Calculate a suitable scale and begin the drawing of the side elevation, end elevation and plan.
- (2) The mortise and tenon joint is frequently used for jointing legs and rails.
- (3) If the tray is grooved into the rail, consideration must be given to the internal height remaining. If a flush surface is required a rebate is sometimes used. Why would this be useful at one end?

For a loose tray, the side could be lap dovetailed to the end. Why would this be a good thing to do?
- (4) Use your initiative to find out about types of wheel and methods of fitting them.
- (5) The finish used must be heat resistant. Perhaps you would prefer to use a plastic laminate surface?
- (6) Check your drawing. Is your title block complete?

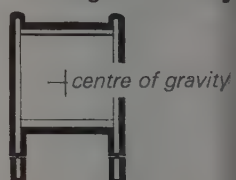
Trolley with additional features



Considering the proportions



Considering the stability



Leg sections



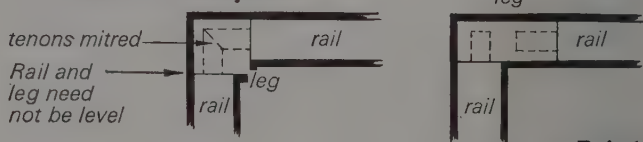
rectangular square round

Are other sections possible?

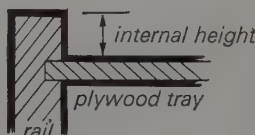
Detail of refinements



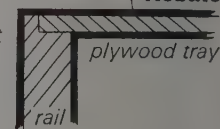
Plan views of corner joints



Grooved rail



Rebated rail



Side elevation of loose tray

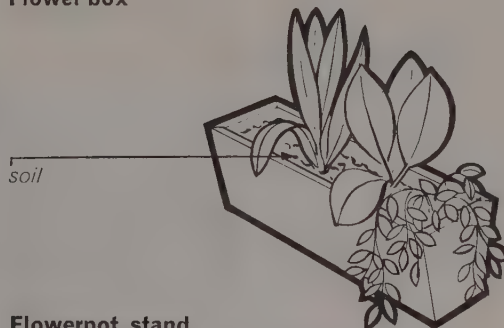


Boxes and stands for plants and flowerpots

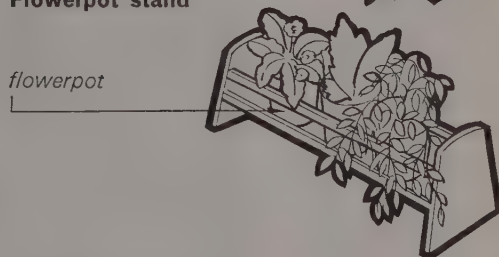
Research

- (1) A flower or plant box usually holds soil alone, whereas a flowerpot stand supports flowerpots containing the soil.

Flower box

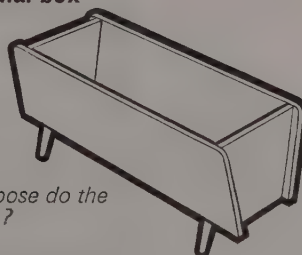


Flowerpot stand



- (2) When considering the various shapes for boxes and stands, think of the surroundings in which they will be placed. This consideration may also govern the overall sizes.

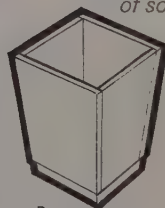
Rectangular box



What purpose do the legs serve?

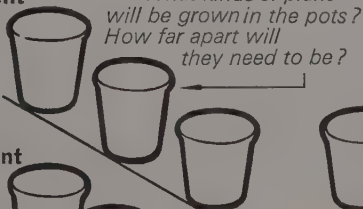
Square tub

Estimate the depth of soil required



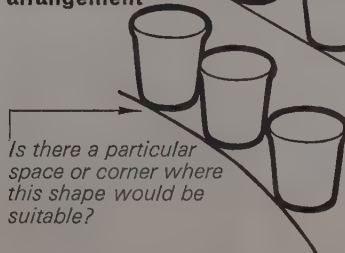
What other shapes are suitable for flower boxes?

Straight-line arrangement



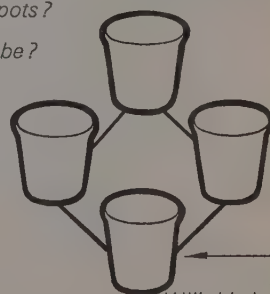
*What kinds of plant will be grown in the pots?
How far apart will they need to be?*

Arc-shape arrangement



Is there a particular space or corner where this shape would be suitable?

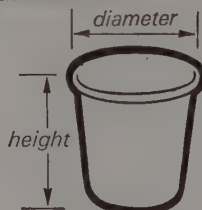
Diamond-shape arrangement



*Will this be too bulky overall?
What other arrangements can you think of?*

- (3) Measure and write down the dimensions of flowerpots you consider to be suitable in size. There are at least a dozen different sizes. What is the hole in the bottom of the pot for? Why are flowerpots frequently placed in a tray or dish? What would happen if you didn't have a lining of tar, metal or plastic in a flower box?
- (4) Decide upon the height at which the flowers will be displayed to their best advantage.

Flowerpot dimensions



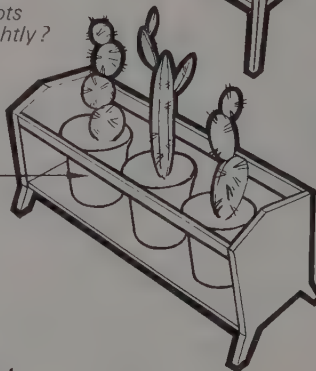
High stand



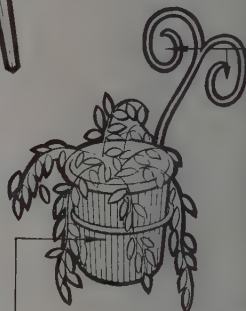
You could adapt this design for flowers in soil

Low stand

Will the pots look unsightly?



Wall holder



Where would you place the wall-fixing hole in this metal holder?
How could this ring of wooden dowels be made expandable?

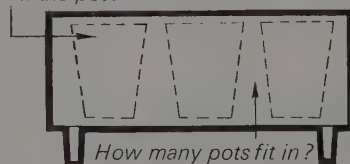
- (5) Make sketches of various designs and then select one. Try to find out the composition of soil that is suitable for potting and the requirements essential for good plant growth.

Full size drawings

- (1) Begin the drawing of the front and end elevations. If your design is square or circular, draw an elevation and a plan.
- (2) Look at the front elevation and ask yourself if the article you have designed is suitable for holding pots or soil, and if it is well proportioned and balanced.

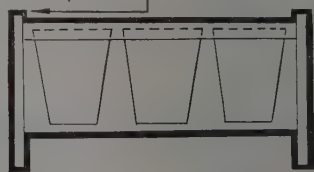
Solid front

Does the side need to cover all the pot?



How many pots fit in?

Does this step harmonize with the lower part?



Open front

Frame and panelled front

Would this form look better proportioned if it were longer?
Would teak be the best wood for outdoors?



Will your stand be placed on the floor or above?

The height of the end of leg may be varied

What other panels could you have?

- 3) Consider the question of stability and height. Look carefully at your drawing of the end elevation. Is your stand steady? Will the pots topple over?

Working drawings

- (1) Begin to draw, to a suitable scale, the front elevation, end elevation and plan. Incorporate a sectional view if this will make your drawings easier to read.
- (2) In the box type of design a dovetail joint is often used at the corners, but other variations are possible. See page 52 for methods of jointing bases, and page 76 for leg joints.

- (3) The open type of design will often involve the use of housing joints and mortise and tenon joints.

Metric conversion: $\frac{1}{2}" = 13 \text{ mm}$

- (4) Remember that a waterproof glue and a durable finish will be required. Complete your drawings with dimensions, title, scale and your name.

Stable legs

Why must the centre of gravity not pass outside this line?

Are these angled components in relation to each other?



Stable feet

Which will be steadier – a full box or an empty one?

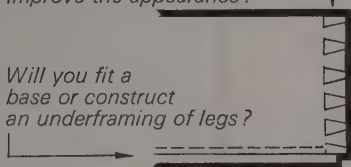


Why does this foot improve the stability?

Common dovetails

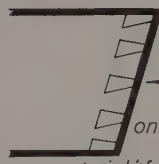
Would a mitred top edge improve the appearance?

Will you fit a base or construct an underframing of legs?



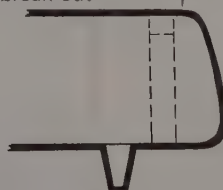
Bevel dovetails

Dovetails with one bevelled side only are quite straightforward to make



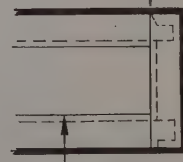
Stopped housing joint

A joint too close to the end will break out.



Haunched mortise and tenon joints

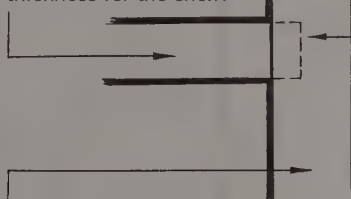
Why is this haunch concealed?



How far will the panel be grooved into the rail?

Stopped housing joint for open design

Is $\frac{1}{2}"$ a suitable thickness for the shelf?



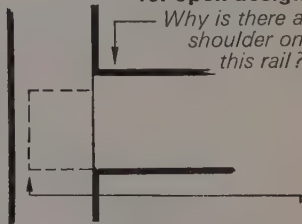
Would you use a dovetail joint if the shelf was at the bottom?

How deep will the housing joint be?

Do not weaken the end

Mortise and tenon joint for open design

Why is there a shoulder on this rail?

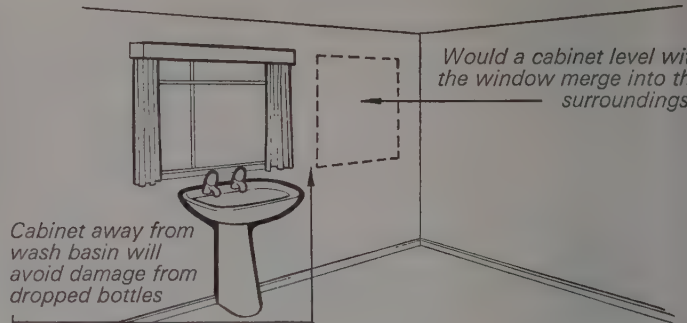


Why is it good to bring the tenon well into the leg or end?

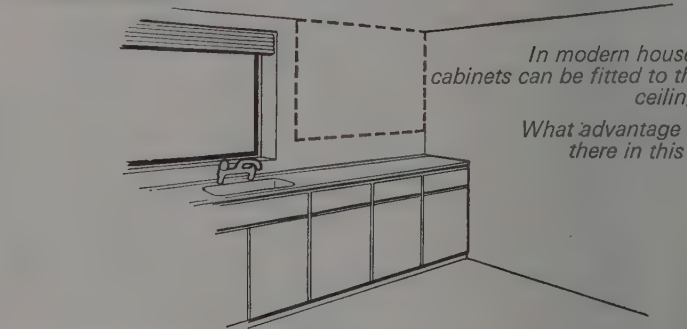
Research

- (1) Consider first the position the cabinet will occupy in the room. It is important that the new piece of furniture should harmonize with the rest of the décor.

Bathroom cabinet



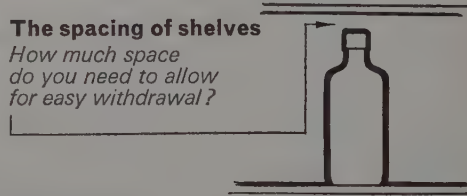
Kitchen cabinet



- (2) Write down the names and measurements of the articles likely to be put in the cabinet.
- (3) Try to determine the shelf area required and also the spacing between shelves.

The spacing of shelves

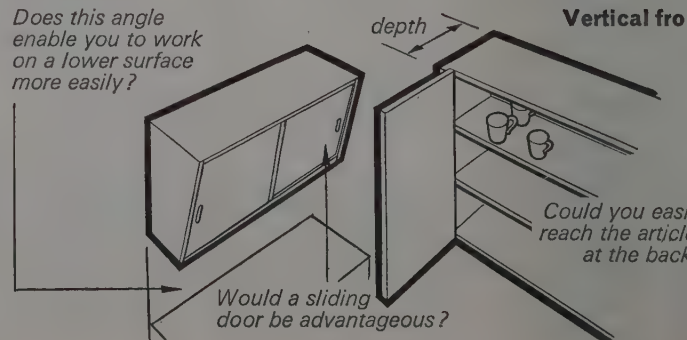
How much space do you need to allow for easy withdrawal?



- (4) What factors will affect the shape and depth of the cabinet?

Angled front

Does this angle enable you to work on a lower surface more easily?



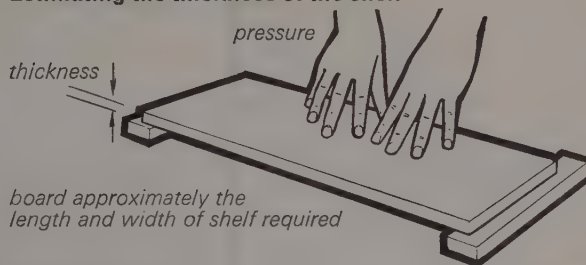
- (5) Make some sketches of cabinets and note the main dimensions.

Full size drawings

- 1) Begin the drawing of the front and end elevations, using the main dimensions from your sketch. Be prepared to make alterations that will improve the appearance and usefulness of the cabinet.
- 2) The thickness of the carcass may be $\frac{1}{2}$ " (13 mm), $\frac{5}{8}$ " (16 mm) or even more, according to the size of the cabinet. The shelf is correspondingly thinner unless it is long and unsupported in the middle. Why?
- 3) What type of door will you fit, and how will you fit it?

Are there more positions possible than the two illustrated?

Estimating the thickness of the shelf



Wooden door

Would a flush door like this be made from plywood, laminboard or blockboard?



Mirrored door

How would this mirror be attached?

Could you have a frame instead of this wooden backing?

Reeded glass door

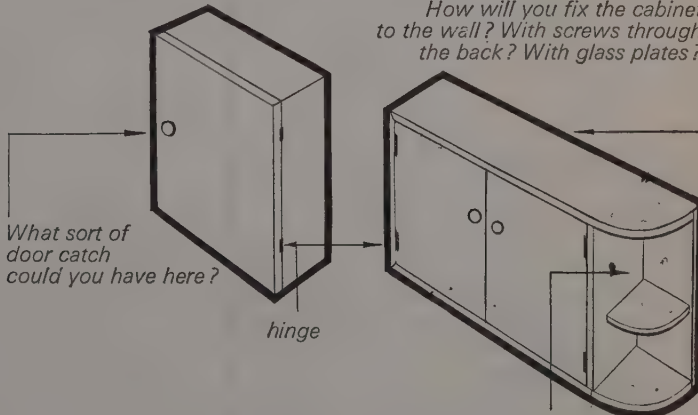


Which other types of glass door give an opaque effect?

Door fitted outside the carcass

Doors fitted inside the carcass

How will you fix the cabinet to the wall? With screws through the back? With glass plates?



Why is there more space here than below?

Working drawings

- (1) Choose your scale and begin the drawing of the front elevation, end elevation and plan. Would the drawing be clearer if you made your end elevation into a sectional elevation?
- (2) Dovetails are frequently used for corner joints but other methods are possible. Have you thought why the dovetail is usually considered to be the best for this purpose?
- (3) The back may be set in a rebate and screwed. The shelf may be fixed by means of a stopped housing joint.
- (4) Refer to your text book for details of hinging, or for the method of constructing the track for sliding doors if you decide to use these.

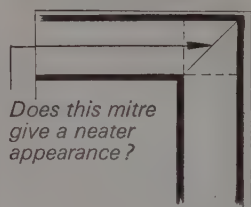
- (5) Think carefully about the shape of the door handle you will use. What kind of handle is suitable for doors that are opened by being pulled outwards? Two kinds are shown here. Are there more?

What handles are suitable for doors that are opened by being pushed sideways? Can you think of others in addition to those illustrated here?

- (6) When choosing the wood and type of finish, remember that bathroom and kitchen cabinets have to withstand water and steam.

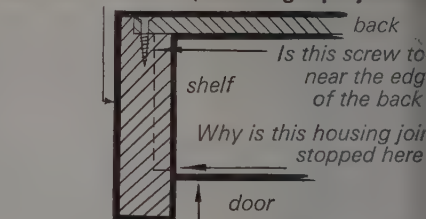
- (7) Complete your drawing and check to see that you have included dimensions, title, scale and your name.

Through dovetail joint with a mitred edge

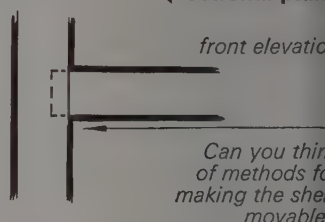


How much clearance do you need to allow between door and shelf?

Cabinet shelf and end (third angle projection)

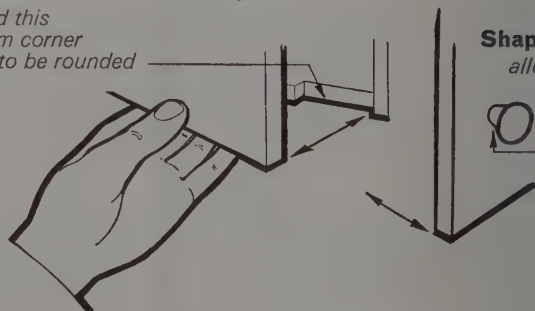


(sectional plan)



Hidden-recess method of opening

Would this bottom corner need to be rounded off?



Shaped handle allowance for finger grip

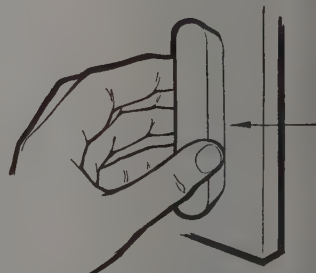


Cut-away handle



If cut right through would you need a backing piece?

Glass doors often have plastic handles here



Narrow protruding handle

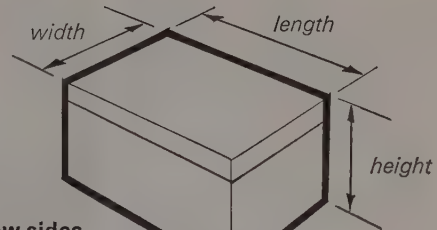
How would you fix this handle?

Small boxes and caskets

Research

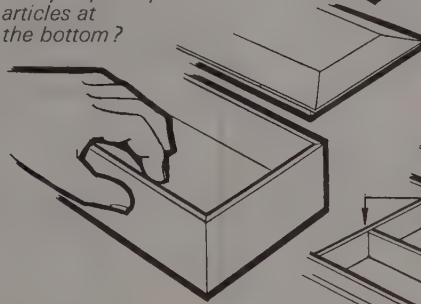
- (1) What sort of things do you intend to keep in your box? Write down a list of these articles and note their sizes.
- (2) From this information, obtain an approximate idea of the length, width and height for the box. Use your rule to help you estimate.
- (3) The sides of the box must be low enough to allow articles to be removed easily. Would the inclusion of a shallow tray suit your purpose better?
- (4) Lids may be cut from the same piece of wood as the box, or they may be made from a separate piece. Do you wish to have a hinged lid or a loose lid?

Box dimensions

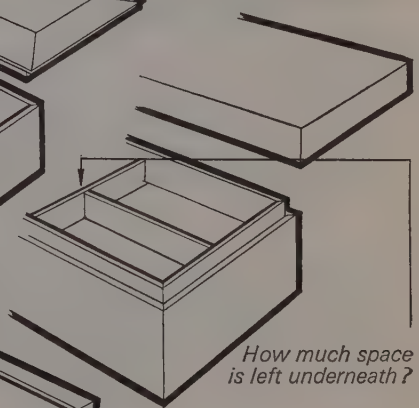


A box with low sides

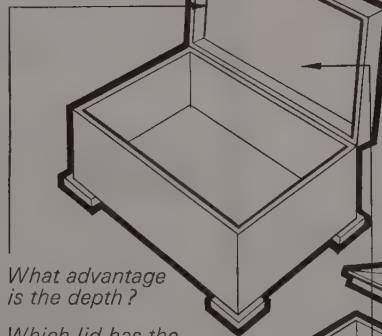
Can you pick up articles at the bottom?



A box with a shallow tray

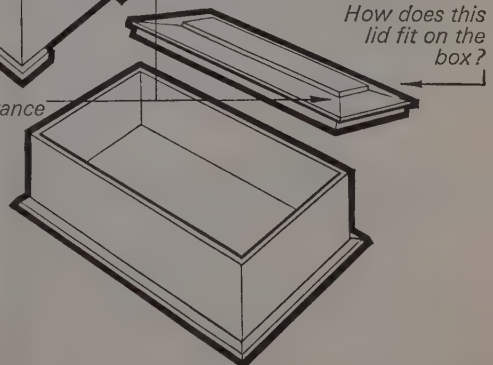


Box and lid cut from same piece



Which lid has the more pleasing appearance when closed?

Lid cut from a separate piece



- (5) Keeping in mind the limits of your requirements, decide on the shape of the external outline. Two shapes are illustrated. Can you think of others? If you are intending to veneer your box, you would normally decide upon a square outline.
- (6) What kind of base do you want for your box?
How will you match your base and lid, so as to combine them into a harmonious unit?
- (7) Make sketches of designs that are both practical and pleasing to look at. Will your choice of wood have any effect on the design?

Full size drawings

- (1) Begin to draw the front elevation, end elevation and plan. Ask yourself if these are pleasing proportions. If you are dissatisfied, try other dimensions.
- (2) Have you designed an efficient means of opening your box? Can you think of other methods in addition to the two illustrated?

If a handle is used, would it be better for it to have sloping sides or straight sides for finger grip?

- (3) Measure small pieces of wood in the workshop before deciding upon the thickness of the side.

Square outline

Does this need to be set in?



Base level or fitted inside

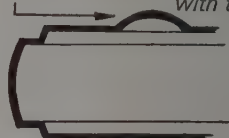


Base set back



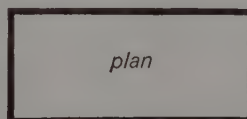
Rounded outline

Do you think this handle combines with the outline?

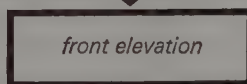


Base projecting

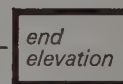
Third angle projection



plan

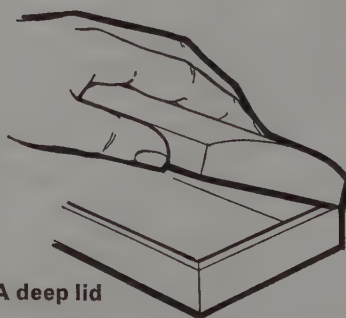


front elevation

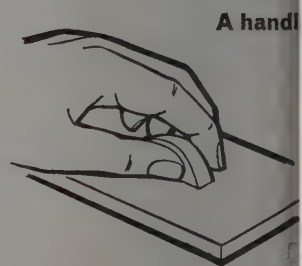


end elevation

The plan and end elevation are viewed from the direction of the arrow



A deep lid



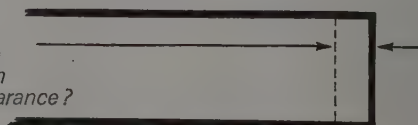
A handle

Shape of handle



Elevation

What thickness of side will give strength and a neat appearance?



(4) Show the internal parts of the box.

(5) Be prepared to make alterations to your drawing where necessary. Have you considered the use of stringings and bandings for decoration?

Working drawings

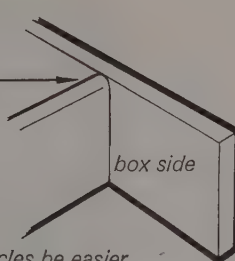
- (1) Choose a suitable scale and draw the front elevation, end elevation and plan.
- (2) The through dovetail, mitred secret dovetail and the plain mitre strengthened with veneer keying are suitable corner joints, but others are possible.

Metric conversion: $\frac{1}{4}$ " = 6 mm

- (3) Some lids may be hinged. Others may fit in a rebate.

Box partition

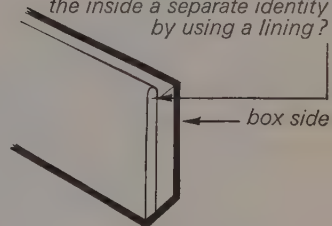
Which joint would you use here?



Will the articles be easier to handle if separated by partitions?

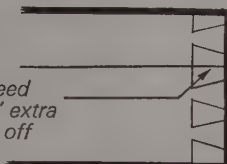
Box lining

Would it be advantageous to give the inside a separate identity by using a lining?



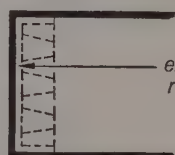
Through dovetail

Will you need to allow $\frac{1}{4}$ " extra for sawing off the lid?



Mitred secret dovetail

How much extra thickness is required for lap?



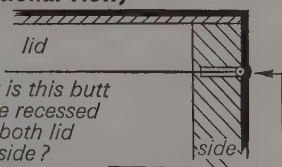
Plain mitre with veneer keying

Why is this veneer slightly angled?



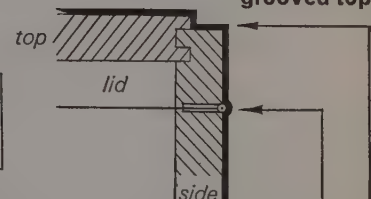
Deep lid hinged (sectional view)

Why is this butt hinge recessed into both lid and side?



Hinged lid with tongue and grooved top

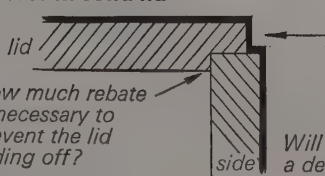
How much will the knuckle protrude?
What is suitable depth for the groove?



Rebate in solid lid

How much rebate is necessary to prevent the lid sliding off?

Will this make a decorative feature?



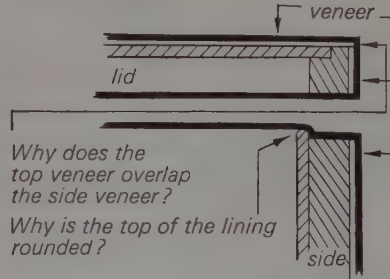
- (4) Bases should be glued and jointed.

- (5) You may wish to decorate your box with stringings or bandings. After measuring a variety of these, draw in your ideas on the plan. Will your box be veneered as well?

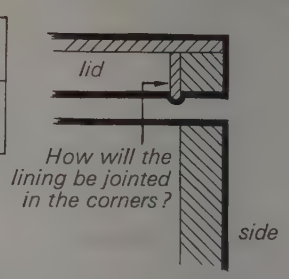
Metric conversion : $\frac{1}{8}" = 3 \text{ mm}$

- (6) The completed drawing must include the dimensions, title, scale and your name.

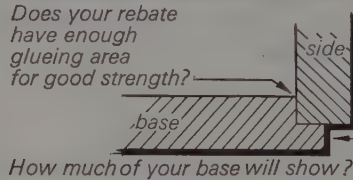
Rebate formed by lining and side (veneered box)



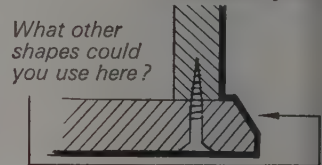
Rebate formed by lining and lid edge



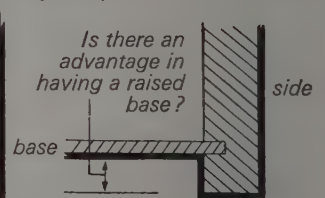
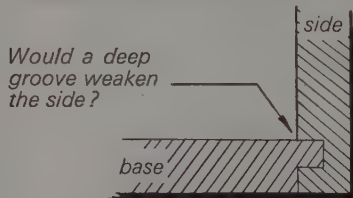
A rebated joint (sectional view)



A screwed joint



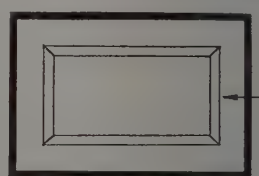
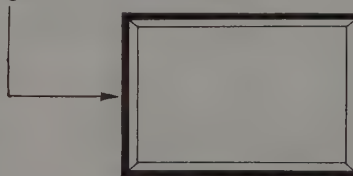
A grooved joint (with mitred corner joints)



Decorated boxes (plan views)

Do you think that the wood of this $\frac{1}{8}"$ stringing will provide a good contrast to the rest of the box?

Arrange the banding so that the spaces are interesting



Could these stringings continue down the side of the box?

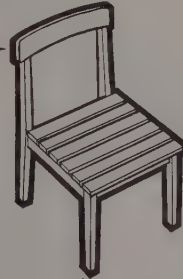


Research

- (1) In order to withstand weather conditions and heavy usage, garden furniture needs to be of simple, robust construction. Tables and chairs for outdoor meals and leisure activities are very useful articles to make.
- (2) Chairs and tables are sometimes combined in one piece of furniture. Some help with the dimensions may be obtained from pages 81 and 90.
- (3) Bench seats are useful not only because of their seating capacity but also because they are decorative features in the garden.

Garden chair and table

How will you protect a curved laminated back from the effects of weather?



Would the construction be simplified if all joints were right angled?

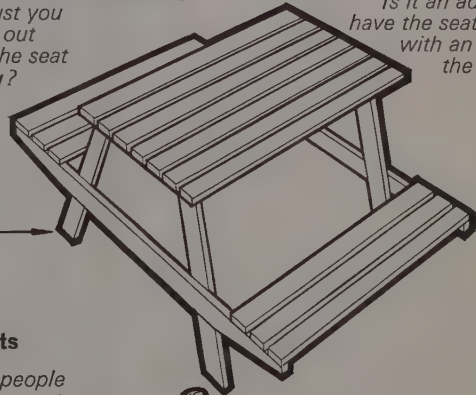
Why are slats frequently preferred for outdoor furniture?



What sort of surface will your furniture stand on? Thin legs will penetrate a soft lawn

Combined table and seating

How far must you pull the leg out to prevent the seat from tipping?



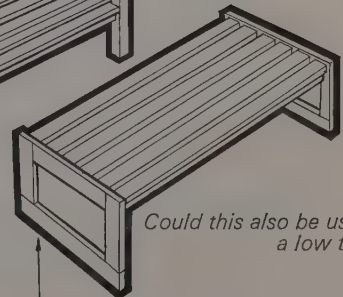
Is it an advantage to have the seat slats flush with an overlap on the table top?

Bench seats

How many people would you expect to seat?



Will this slight curve make the seat more comfortable?



Could this also be used as a low table?

Would ends like this be steadier?

- (4) Furniture constructed from a combination of wood and metal is particularly suitable for garden use.

- (5) It is sometimes an advantage to be able to fold up and pack away your garden furniture.

- (6) Make sketches of your own ideas on garden furniture.

Full size drawings

- (1) Begin the drawing of the front and end elevations of the design you wish to develop.
- (2) Try to make good sturdy furniture and yet keep the form and proportion pleasing to the eye.
- (3) Refer to fuller details about the design of chairs, tables, stools and trolleys in their respective programmes elsewhere in this book.

Metric conversion: $1\frac{7}{8}" = 48 \text{ mm}$

Working drawings

- (1) Calculate a suitable scale and begin to draw the front elevation, end elevation and plan. Take care with the lay-out.
- (2) Most frameworks will require single mortise and tenon joints, but if the legs and rails are very thick, then twin tenons should be used.

Furniture with metal parts

Would a screw from the underside hold the seat or would you prefer a bolt?



A delicate part like this is possible with metal

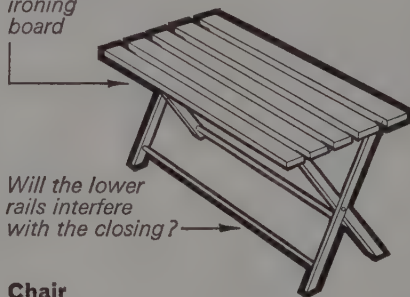
Could these slats be touching each other?

Mild steel is suitable here but what other metal could you use?



Folding furniture

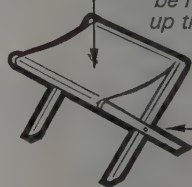
Lift the top and close like an ironing board



Will the lower rails interfere with the closing?

Do you like the comfort of a canvas top?

Will the pivot be halfway up the leg?



Chair

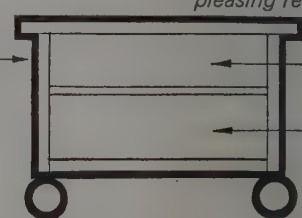
Legs can be made as thick as $1\frac{7}{8}"$

What width is necessary for a strong joint?



Trolley

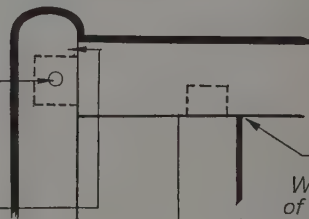
Is the overall shape a pleasing rectangle?



Framework joints – single tenons

Would a dowel improve the appearance as well as increase the strength?

Why is it not necessary to use a haunch here?



Does the larger area underneath give the impression of stability?

What is the advantage of covering the ends of the mortise with a shoulder?

- (3) A top of screwed slats is very satisfactory but a framed top can also be most effective if used with a solid structure underneath.

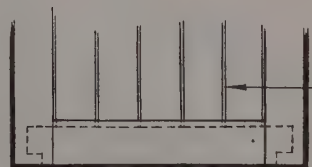
Top of screwed slats (third angle projection)

Why are the screws and sockets made in brass?



*What are the articles to be used on the table?
This will determine the spacing*

Framed top



Would a chamfer define each slat and thereby form a rhythm?



Could this top be screwed from the underside without allowance for shrinkage?

- (4) When deciding on the method of pivoting a folding part, give careful consideration to the degree of strength required.

- (5) Teak, oak, elm and pine are frequently used for garden furniture. Why is an oiled finish particularly good for teak, a varnished finish for oak, and a painted finish for pine? What special characteristics should the glue have?

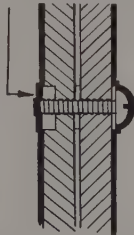
- (6) Complete your drawing and include dimensions, title, scale and your name.

Pivots (sectional views)

Will the framework hold these legs together?



Would a rivet be better than a recessed nut?



Why is a washer placed between the leaves of the hinge?



dowel

nut and bolt

centre pivot hinge

Telephone furniture and fitments

Research

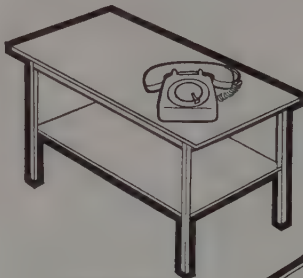
- (1) Consider what method of supporting the telephone would be most suitable in your house. Would it be better to have a piece of furniture standing on the floor, or to put a fitment on the wall? Consider the space available and the nature of the surroundings. Perhaps you can think of another method in addition to those illustrated here.

- (2) One of the essential requirements is that the phone should be at a convenient height. Will you be standing or seated?

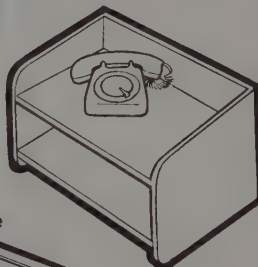
Sometimes the seating is incorporated as part of the fitting.

Constantly bear in mind the final position of the furniture you are designing, and its surroundings.

A table



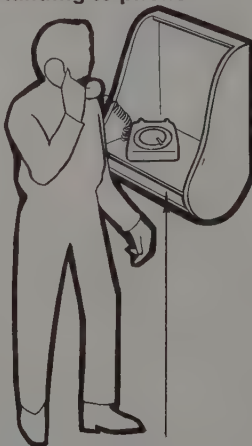
A wall-fitment



A cabinet

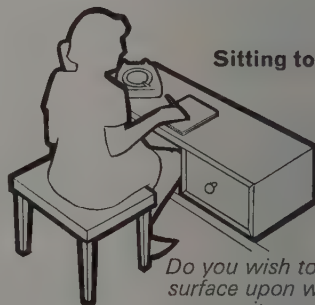


Standing to phone



Is it a good idea to make a shelf space for directories?

Sitting to phone

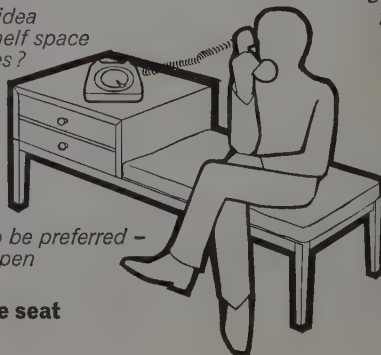


Do you wish to have a surface upon which to write messages?

Stool can be made to fit underneath when not in use

Which are to be preferred - drawers or open shelving?

A telephone seat



(3) Do you wish to keep dust away by using doors, drawers or a flap?

- (4) Find out the following measurements:
 (a) length, width and height of phone,
 (b) convenient phone height from floor,
 (c) size of directories,
 (d) seat sizes (if required).
 (5) Sketch out your ideas.

Full size drawings

- (1) Using the information you have collected, begin to draw the front elevation. Draw either the end elevation or plan—whichever gives most information.
 (2) Before deciding upon the thicknesses of the various parts measure different-sized pieces of wood in the workshop. Consider which varieties of timber will combine well with the colour of your phone and the nearby furniture.

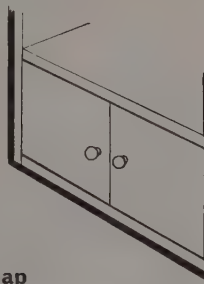
Metric conversion: $\frac{5}{8}" = 16 \text{ mm}$; $\frac{7}{8}" = 22 \text{ mm}$; $1\frac{1}{4}" = 32 \text{ mm}$; $2" = 51 \text{ mm}$

- (3) Try to make the proportions interesting.
 (4) You may need to take into account the position of the cable.
 (5) Before proceeding, make sure that your design is pleasing to look at and enables you to use the phone efficiently.

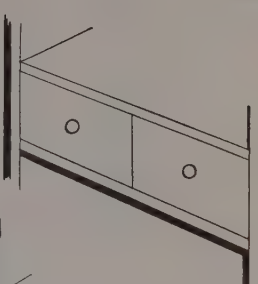
Working drawings

- (1) Begin the drawing of the front elevation, end elevation and plan.
 (2) Table and stool constructions usually involve the making of mortise and tenon joints between the legs and rails, as shown in the diagram. For further details of table and stool constructions see pages 25, 34 and 93.

Doors

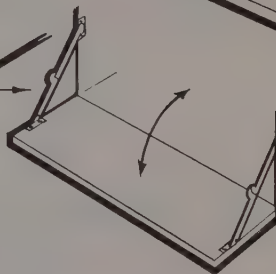


Drawers



A flap

What types of cabinet stay have you seen?

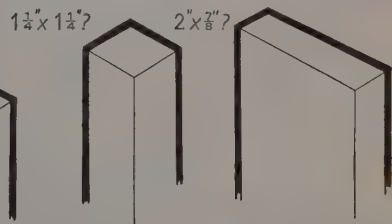


Cabinet thickness



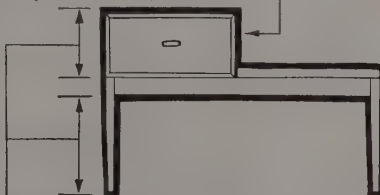
Is $\frac{5}{8}"$ sufficient for good strength and a pleasing appearance?

Leg sizes



Free-standing furniture

Why is this a better shape than a square?



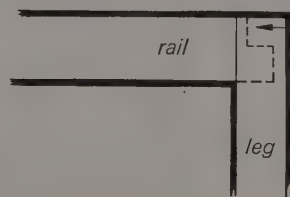
Variation here creates interest

Wall-fitment

Sometimes better balance is achieved by narrowing the top



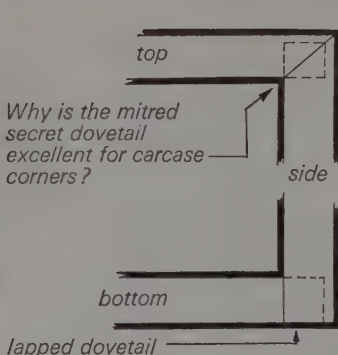
A haunched mortise and tenon joint



What is the purpose of this haunch?

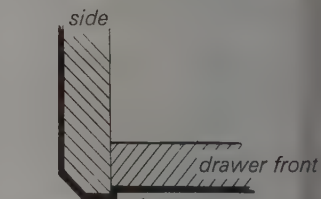
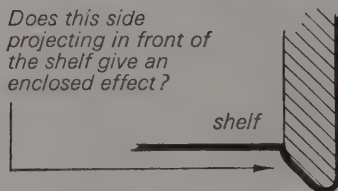
- (3) Dovetail joints and housings are often used in cabinet constructions.

Joints used in cabinet constructions



- (4) Well-thought-out edge shaping can enhance your work.

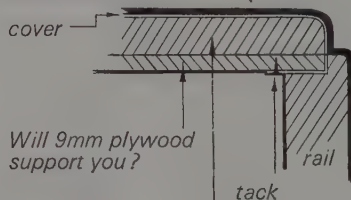
Plan views of horizontal sections



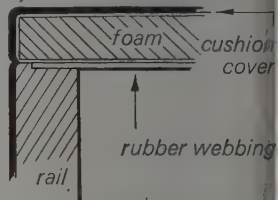
- (5) A stool seat may be permanently upholstered or a loose cushion may be provided.

A fixed cushion

(sectional elevations)

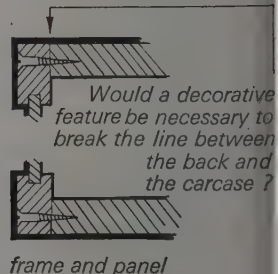
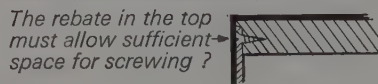


A loose cushion

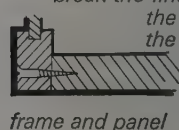


- (6) When planning the position of the back, avoid revealing the unsightly edges of plywood.

Back (vertical sections)



- (7) Complete your drawing and include dimensions, title, scale and your name.

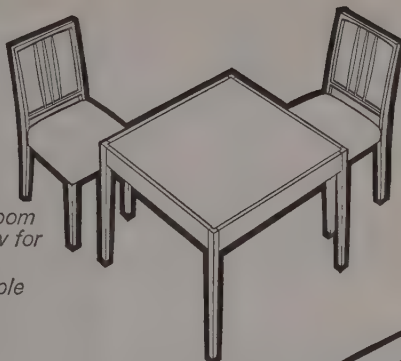


Occasional and special-purpose tables

Research

- (1) Try to determine the exact purpose of the table you are to make. In which room will it be used? Will games like chess or cards be played upon it? Will you use it for a telephone, pot plants or magazines?
- (2) Measure with your rule a suitable height, length and width for the table. Check these measurements by testing them in the actual room setting.

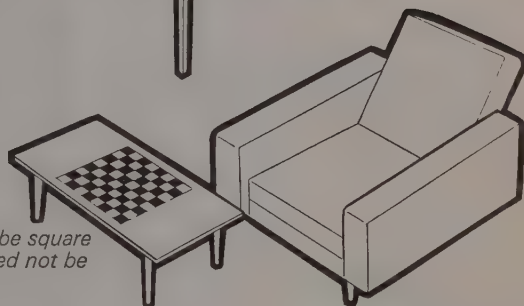
Card table



*How much room
will you allow for
the knees?*

*Will four people
usually play?*

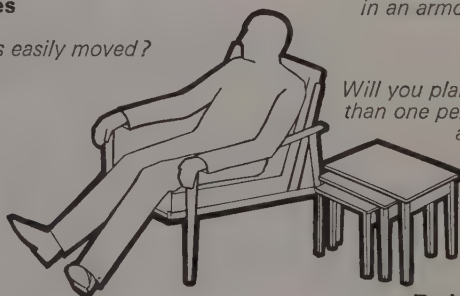
Chess table



*The board must be square
but the table need not be*

Nest of tables

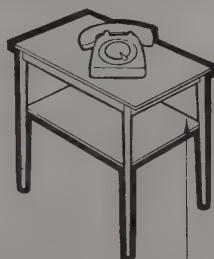
Are the tables easily moved?



*Do you think you will sit
in an armchair when
playing?*

*Will you plan for more
than one person's cup
and plate?*

Telephone table



*Do you aim to telephone
standing or seated
or both?*

*What are the dimensions
of the directory?*

Bedside table



*Is your table at a
convenient height
when you lean out
of bed?*

- (3) In one commonly used construction the four legs are connected by rails and covered with a top. But other variations are possible.

- (4) Additional storage space may be provided by a drawer (see page 91). Sometimes a shelf is used.

- (5) Make preliminary sketches of different designs.

Full size drawings

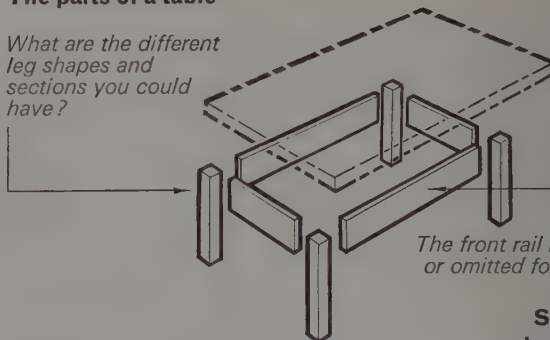
- (1) Begin the drawing of the elevations in chalk on a blackboard or other large surface.
- (2) Rails and legs need to be thick enough to make a strong joint, in relation to the overall size. Aim to obtain a pleasing shape that will do the job well.

Metric conversion: $1\frac{3}{8}" = 35 \text{ mm}$; $2\frac{1}{2}" = 64 \text{ mm}$

- (3) Try different positions for the rails, and for the shelf and drawer if these are required. Remember that variety creates interest.

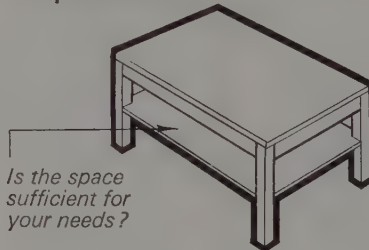
The parts of a table

What are the different leg shapes and sections you could have?



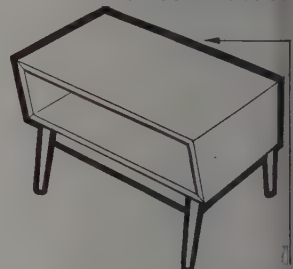
The front rail may be reduced or omitted for nests of tables

Table with an independent shelf



Is the space sufficient for your needs?

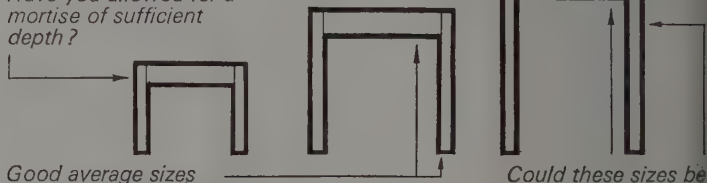
Shelf and top in a box construction



Will this arrangement make your design look top heavy?

Estimating rail and leg dimensions by comparison

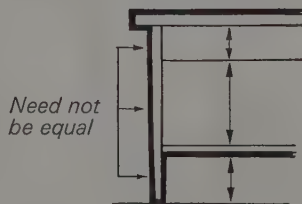
Have you allowed for a mortise of sufficient depth?



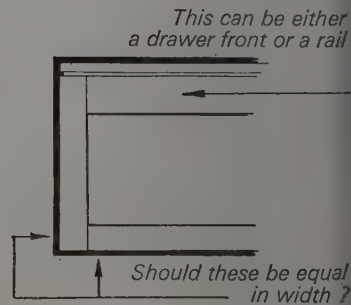
Good average sizes are: rail $2\frac{1}{2}"$ wide and leg $1\frac{3}{8}" \times 1\frac{3}{8}"$

Could these sizes be reduced if a lower rail were included?

Proportional spacing



Need not be equal



This can be either a drawer front or a rail

Should these be equal in width?

- 4) The position of the top should combine well with the underframe.

- 5) Before proceeding further stand back and view your drawing. Can any improvements be made?

Working drawings

- (1) Calculate a suitable scale and begin the drawing of the side elevation, end elevation and plan.
- (2) If the rails are not thick enough for a shoulder on each side of the tenon, then a barefaced tenon may be used.

- (3) A shelf may be jointed to the legs, or rest on the rails, or be constructed of slats or dowels.

Top positions

*overhanging:
combines
well with
tapered legs*

set back

*level: combines well with
parallel legs.*

rebated

Haunched mortise and tenon joints (third angle projection)

*Will this
barefaced tenon
be strong enough?*

*Why are the
tenons mitred?*

*Does this shoulder
allow for shrinkage
in the rail?*

Shelf jointed to leg

plan views

Shelf resting on rails

*Why are two
tenons better than
one here?*

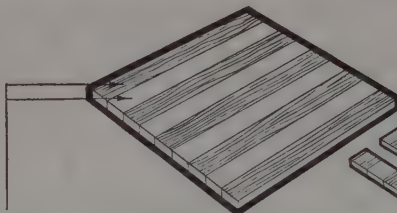
Slat jointed to rail

*Will the spaces
between the slats
prove troublesome?*

*Why will it be better
to use edged plywood
rather than solid wood?*

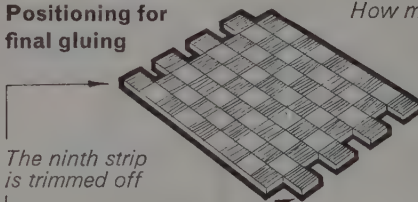
- (4) Chessboards are first glued in strips, then cut across, fitted into position and secured to a base.

Strips glued together



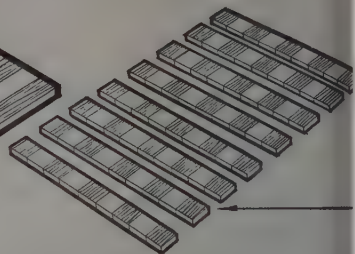
Which varieties of timber make a good contrast?

Positioning for final gluing



The ninth strip is trimmed off

Strips sawn across



How much allowance will you make for sawing and planing

Secured to the base (alternative edgings shown)

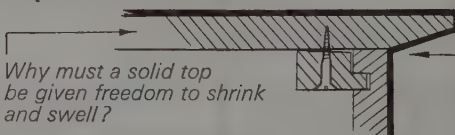
Do you wish to add a surround?



How will you join the edging to the base

- (5) Consider in detail the edge shaping and fixing for the top. Three methods are shown here. Can you think of further variations?

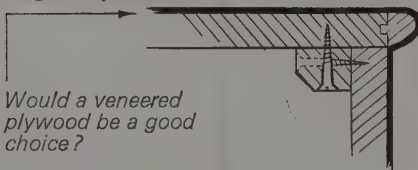
Top secured with a button



Why must a solid top be given freedom to shrink and swell?

How do you ensure a tight fit here

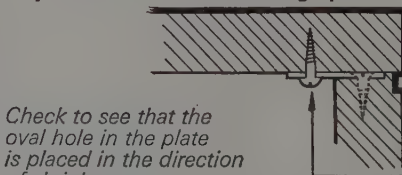
Edged top secured with a screwed block



Would a veneered plywood be a good choice?

Is this edging comfortable to the hand

Top secured with a shrinkage plate



Check to see that the oval hole in the plate is placed in the direction of shrinkage

Why is a roundhead screw a good choice here

- (6) Finish the drawing. Have you included the hidden details, dimensions, title, scale and your name?



Record cabinets

Research

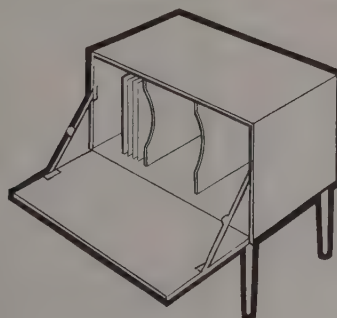
- (1) Do you wish to store records only in your cabinet?
Or do you wish to include a record player and accessories?

- (2) What are the diameters of the records you expect to keep in the cabinet? Write down also the size of the record player, if that is to be included.

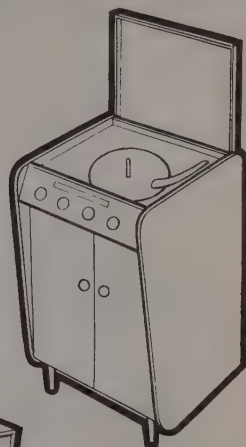
- (3) Estimate the length of shelving required for the records you already have, and allow further space for future additions. Why is it usual to store records on edge?

- (4) Do you prefer a design that is basically a vertical rectangle or one that is basically a horizontal rectangle? Can you think of another suitable shape? Have you considered the possibility of a wall-fitment?

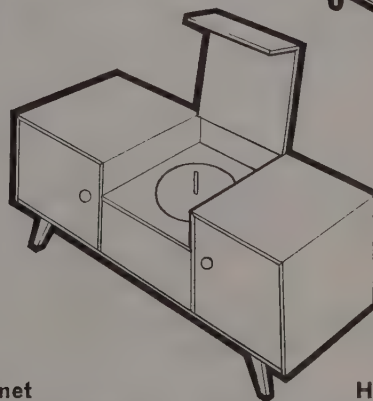
Cabinet for records only



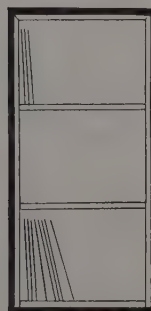
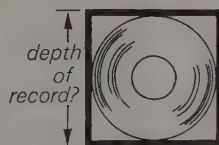
Cabinet with record player on top



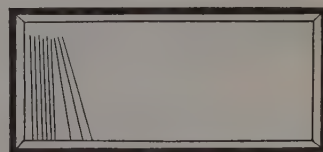
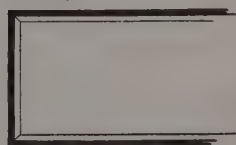
Record player incorporated within the cabinet



Vertical cabinet



Horizontal cabinet



- (5) Why do cabinets have legs? Legs must harmonize with the rest of the cabinet.

- (6) Try out freehand sketches of different designs until you find one that is satisfactory.

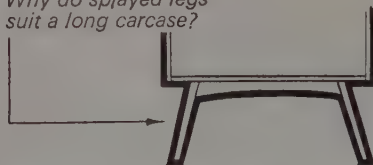
Full size drawings

- (1) Begin the drawing of the front and side elevations of the cabinet.
- (2) Keeping within the limits of your basic requirements, experiment with the proportion of the elevations.
- (3) In drawing the side elevation make sure that your records have sufficient clearance. Is your cabinet likely to topple over when full of records?
- (4) What is a comfortable height for removing records from a cabinet?

- (5) Doors may be made for the cabinet. But are doors really necessary?

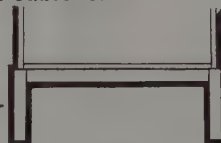
Tall legs

Why do splayed legs suit a long carcass?



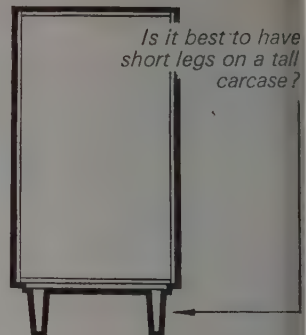
To emphasize cubic form

Use a vertical and parallel type of leg



Short legs

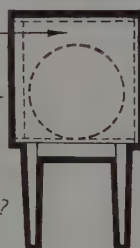
Is it best to have short legs on a tall carcass?



Allowing space for the records

clearance

Have you allowed room for the door to close?

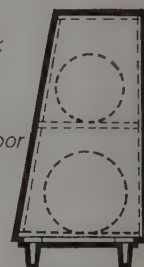


back

door

Have you allowed for the shelf?

back



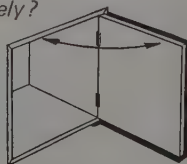
A record cabinet in use



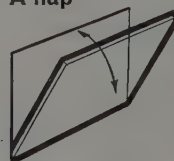
Note that the legs form part of the carcass framework in this design

A hinged door

Will there be space for the door to swing freely?

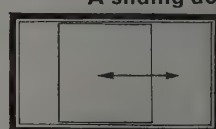


A flap



Is this likely to tip the cabinet forwards?

A sliding door



Would a sliding door be the most suitable for an angled front?

- (6) A large number of records are best classified by means of partitions. Can you think of other ways of separating records?

Working drawings

- (1) Begin the drawing of the front elevation, side elevation and plan, to a suitable scale. Use a sectional elevation if this will give more information.
- (2) Would $\frac{3}{8}$ " (16 mm) be a suitable thickness for the sides of the carcass? Suitability is determined by the size of the cabinet and the type of joint used.
- (3) For the top corner joints many variations of the dovetail joint are possible, but secret dovetails give a clean appearance without breaking the line of the grain. A stopped housing joint is used where the side continues above the top.
- For the bottom corner joints dovetails are again frequently used, unless the side continues downwards.

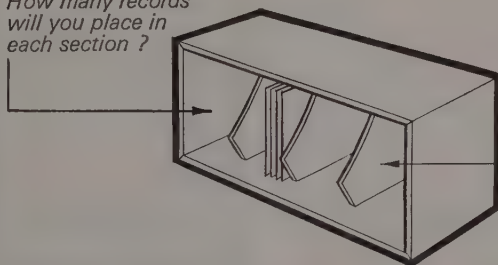
- (4) What advantage is there in shaping the carcass front edge? Do you wish the lipping on the door to be visible? What other door constructions, in addition to those illustrated here, can you discover?

- (5) Make sure the door handle has a firm fixing.

- (6) How will the partitions be jointed? Show this clearly on your drawings.

Partitioning records

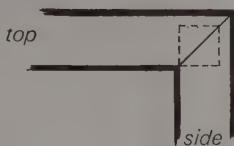
How many records will you place in each section?



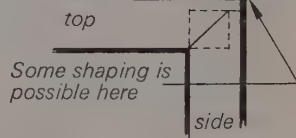
What considerations determine the shape of the partition?

Mitred secret dovetail

(front elevation)

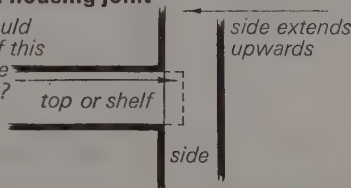


Double lapped dovetail with mitred face



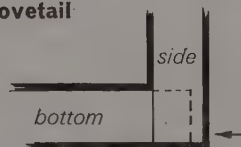
Stopped housing joint

What would happen if this joint were too deep?

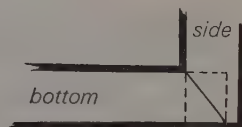


Lapped dovetail with mitred front edge

Lapped dovetail

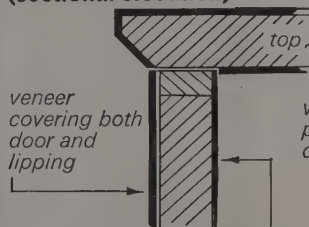


Does the lap need to be very thick to maintain strength?



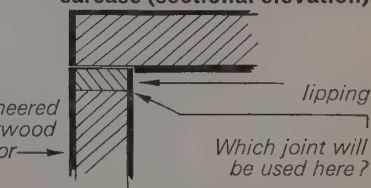
When would a mitre enhance the appearance?

Door set back from shaped carcass edge (sectional elevation)



Why should you also veneer this side?

Door flush with square-edged carcass (sectional elevation)



- (7) Why is the back often fitted into a rebate?

- (8) Many underframe constructions have rails tenoned into the legs.

Others have a flat frame and turned legs.

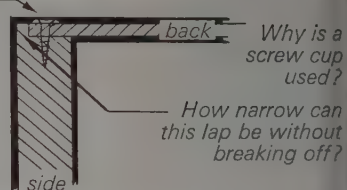
See page 76 for further possibilities.

The fixing of the leg construction to the carcass should normally allow for shrinkage. Why?

- (9) Use your reference books to look up details you are uncertain about, and check your drawing thoroughly before removing it from the drawing-board. Don't forget to add your name.

Back rebated into the side (sectional plan)

countersunk screw

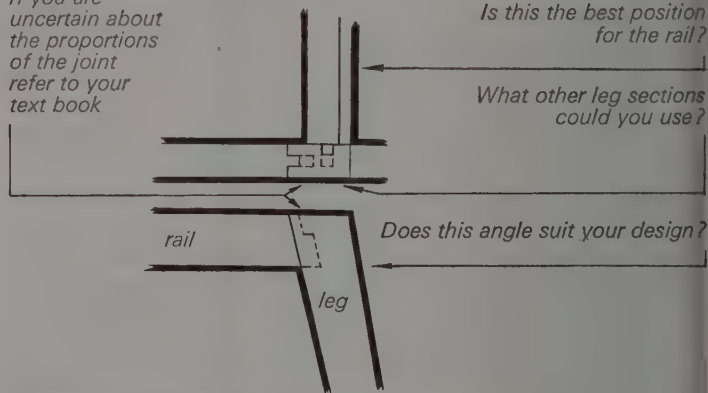


Why is a screw cup used?

How narrow can this lap be without breaking off?

Haunched mortise and tenon joint (third angle projection)

If you are uncertain about the proportions of the joint refer to your text book



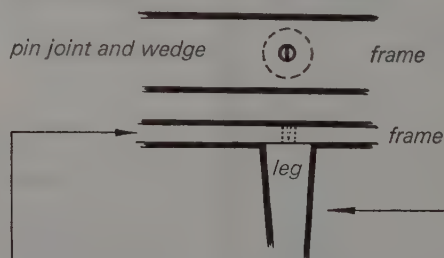
Is this the best position for the rail?

What other leg sections could you use?

Does this angle suit your design?

Flat frame and round leg (wedged)

pin joint and wedge



Only the front edge of the frame is seen. Does this improve your design?

Could other leg shapes be used?

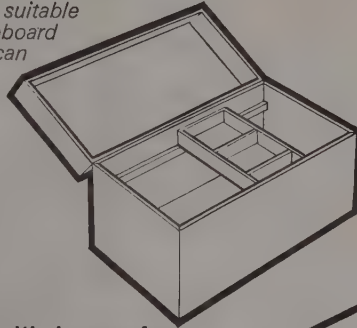
Needlecraft storage units

Research

- (1) Needlecraft materials may be stored in a box solely for the purpose, or storage space for them may be incorporated in another piece of furniture.

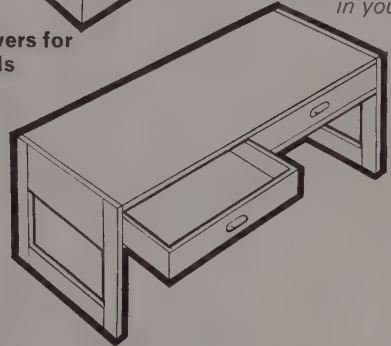
Box for needlecraft materials

Have you a suitable shelf or cupboard where you can keep the box?



Is there room for an additional coffee table in your house?

Low table with drawers for needlecraft materials



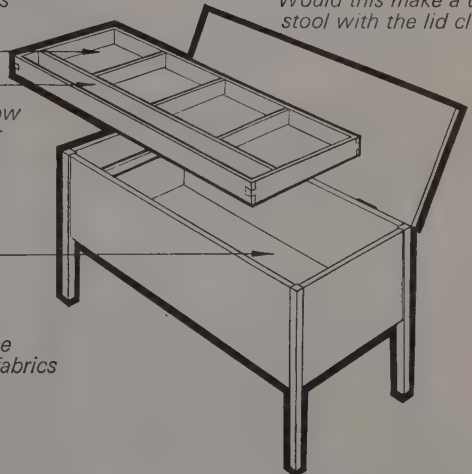
Items to be stored

Could cotton reels be kept here?

Is this long shallow space suitable for knitting needles?

How large a space do you need for fabrics and wools?

Would this make a useful stool with the lid closed?



Will you need a special compartment for needlecraft patterns?

- (3) After discussion with the person who will use the unit, decide upon the most suitable height. Is a working surface required?

- (4) A useful working surface is often provided by a lid, top or flap in the open position.

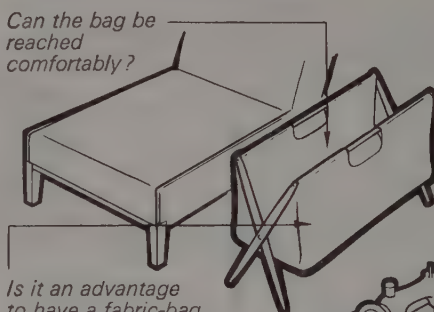
- (5) Make sketches of different units before you decide upon the one you prefer. Be observant at exhibitions of furniture, in shops and at home.

Full size drawings

- (1) Begin the drawing of the front and end elevations, using the overall length, width and height measurements you have just estimated.
- (2) Keep in mind possible constructions when working out the ideal shape.

Low unit beside the easy chair

Can the bag be reached comfortably?



Is it an advantage to have a fabric-bag style to fold away?

Will the sewing machine be in constant use?

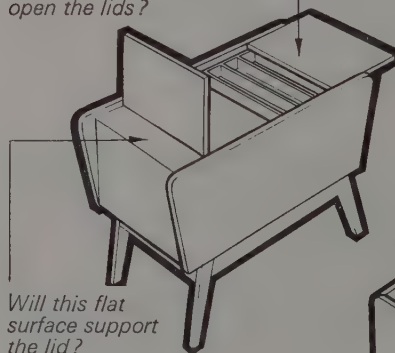
Which would be preferable—a hinged or sliding top?



High unit and working surface

Sideways opening

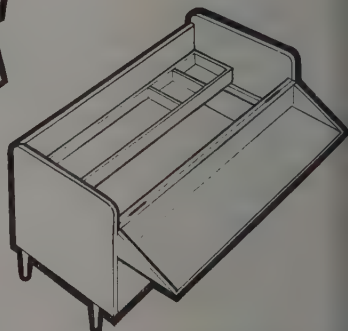
How will you open the lids?



Will this flat surface support the lid?

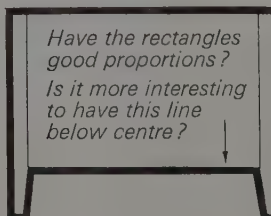
Front opening

Will the weight of the cabinet prevent tipping forwards?



Legs as part of the carcass

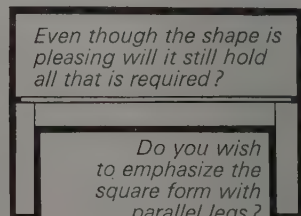
*Have the rectangles good proportions?
Is it more interesting to have this line below centre?*



Separate legs and carcass

Even though the shape is pleasing will it still hold all that is required?

Do you wish to emphasize the square form with parallel legs?



- (3) Include a plan of compartments for the small items. If possible, place the actual articles on the drawing to test for size and ease of removal.

Working drawings

- (1) Begin to draw to scale the front elevation, end elevation and plan.
 (2) The mortise and tenon joint is frequently used for legs, in its double or single form according to the width of the rail. Other shapes and joints for legs may be seen on pages 34 and 76.

- (3) Carcases and trays often require the use of the dovetail or housing joint in their construction. The choice of joint will depend upon the sizes of the material, the appearance required and the limit of your capabilities.

- (4) Support for a tray may be given by jointing strips of wood to two opposite sides of the carcase or framework.

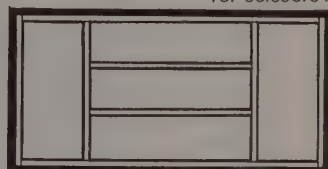
- (5) Tops and lids that are allowed to move freely must be so constructed that they will remain flat. Boxes with deep lids may be seen on page 49.

- (6) Check your drawing thoroughly before removing it from the drawing-board. Have you included the dimensions, hidden details, title, scale and your name?

Plan view of compartment arrangements

Will all the cotton reels fit in the space you have provided?

Is a separate space safer for scissors?



Show the thickness of wood on your drawing

Are sub-divisions required for silks?

Wide rail joint

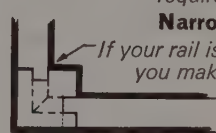
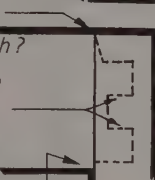
(third angle projection)

Is this step between leg and rail likely to collect dust?

Will an open top necessitate a concealed haunch?

Would the leg be weakened too much if you had one long tenon?

Could you rebate a base in here?



Narrow rail joint
If your rail is thin, could you make use of the barefaced tenon?



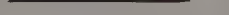
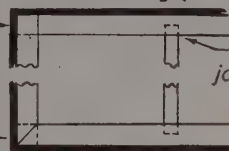
A fixed top or separate box construction would usually cover an open haunch

Possible joints for the carcase and tray (third angle projection)

Could you arrange these through dovetails to form decorative pattern on the side?

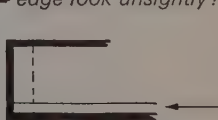
A mitred top edge would permit shaping. Is the mitred dovetail preferable to the through dovetail in your case?

Will a rebated base mean a mitred edge to the corner joint?



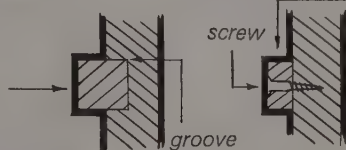
Why must not a stopped housing joint be cut too deeply?

If the base is fitted underneath will the edge look unsightly?



Tray supports

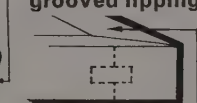
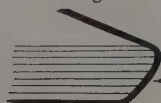
Why must the grain of the strip and side run in the same direction?



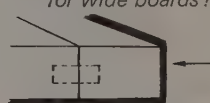
Have you allowed sufficient width to hold the tray and yet make it easily removable?

Will this angle help to keep the layers out of sight?

Laminboard with grooved lipping



Why is not this method so suitable for wide boards?



Plywood top

Could a contrasting wood be used for the lipping?

Solid board with dowelled ends

Research

- (1) Observe and study different easy chairs. Note the general appearance, construction and upholstery details. Where will your chair be used? Will it be used for a special purpose? As you design your chair, constantly keep in mind its use and place in the room setting.
- (2) Make measurements of the seat height, width and depth of a comfortable easy chair. Measure the height and angle of the back and note the position of the arms. What alterations would you like to make in these measurements?
- (3) Consider some possible variations. Is it necessary to support the head?

Do you need armrests?

Would a sloping seat be more comfortable than a horizontal seat?

- (4) Sketch several designs from the notes you have made and then make your final choice.

Chair measurements

*angle
between
seat and back*

seat height

*height
of back*

seat depth

Chair with headrest

*How much of
the head needs
to be covered?*

Chair without arms

*Do arms improve
the strength of
a chair?*

Chair with sloping seat

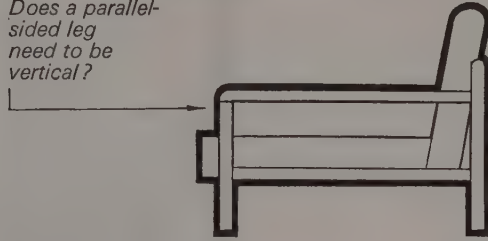
*Must the rail always
follow the line of the seat?*

Full size drawings

- (1) Begin to draw the side and front elevations.
- (2) When considering the main dimensions remember that your chair may have to accommodate a wide variety of body sizes. Ensure that the chair is stable.
- (3) Does the shape of the legs blend with the overall form of the chair?

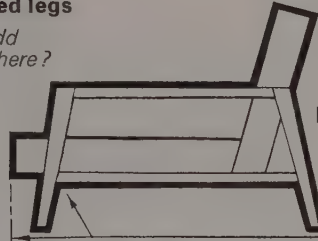
Chair with parallel legs

Does a parallel-sided leg need to be vertical?



Chair with tapered legs

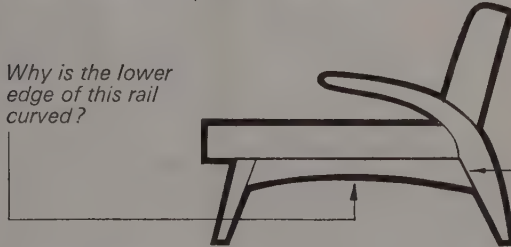
Do you wish to add a shaped armrest here?



Why is the leg inside the seat area?

Open frame

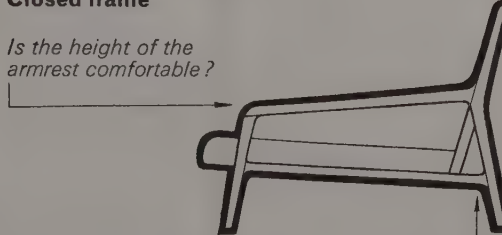
Why is the lower edge of this rail curved?



large joint surfaces

Closed frame

Is the height of the armrest comfortable?



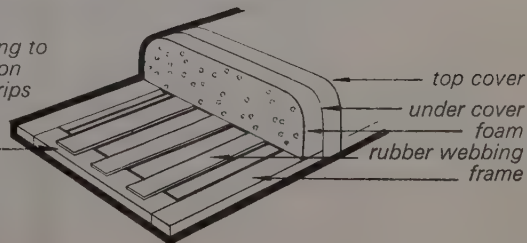
smaller joint surfaces

- (5) Consider the question of upholstery. Find out all you can about upholstery methods from books and exhibitions of furniture.

A typical seat construction

Experiment with the rubber webbing to find out the tension and number of strips required

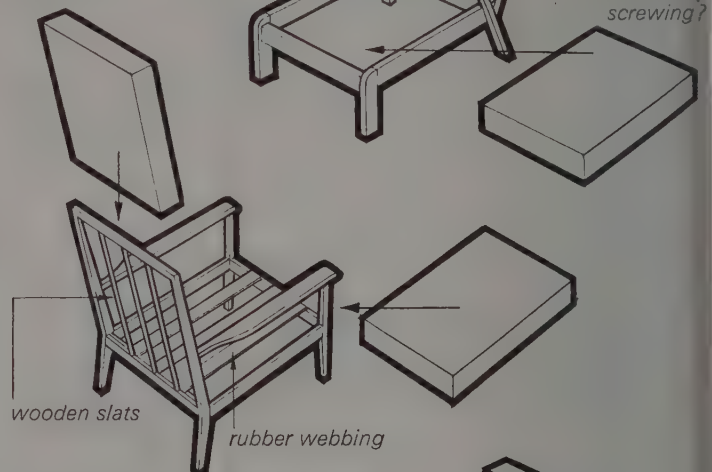
How will you secure the ends?



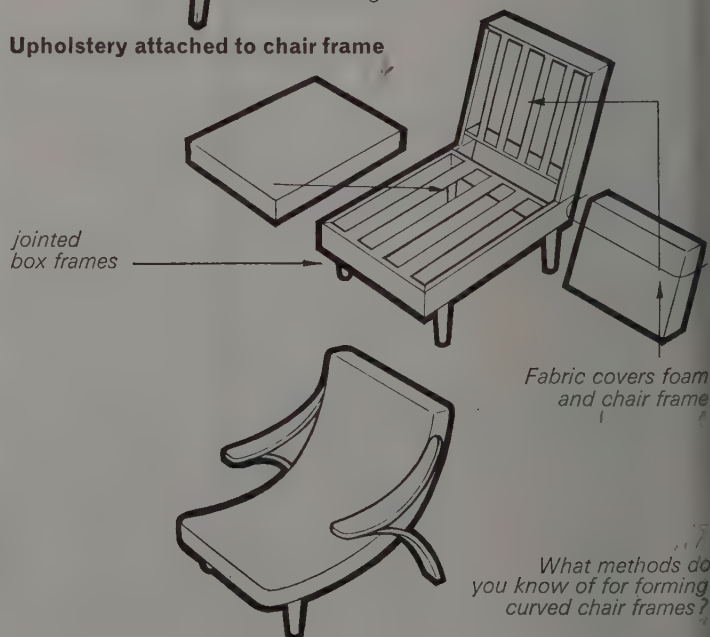
Upholstery frames may be added separately or built in.

Completely upholstered frames added separately

Chair with loose cushions



Upholstery attached to chair frame



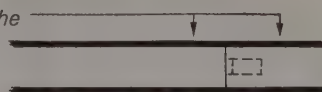
- (6) Alter your drawing until you are satisfied with it both aesthetically and functionally. If your design involves difficult shapes, cut out full size cardboard templates.

Working drawings

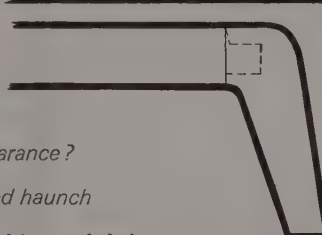
- (1) Quickly calculate a suitable scale and then begin to draw the front and side elevations and the plan.
- (2) The rail and leg joints in chairs are most frequently mortise and tenon joints. Sometimes the need for extra strength necessitates a twin mortise and tenon joint.

Front leg joint (third angle projection)

Which would be the better place for a cross rail?

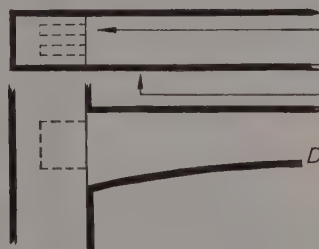


Does this shaped leg enhance the appearance?



Note the concealed haunch

Twin mortise and tenon joint



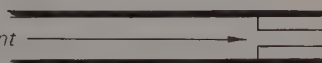
Note the increase in gluing area

How much thicker will the rail and leg need to be?

Do they need to be the same thickness?

A bridle joint

What reinforcement could you insert?

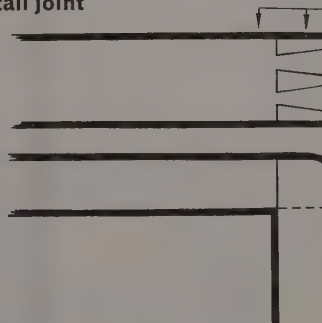


Is this armrest comfortable?



top of leg

A through dovetail joint



Does the armrest need to be the same width as the leg?

Would some shaping be desirable here?

- (3) Although most commonly the stopped mortise and tenon joint is used at the armrest, sometimes a through joint is used for decorative effect.

- (4) Show all hidden details and complete your drawings with dimensions, title, scale and your name.

Research

- (1) Consider the room setting for the bookcase, and decide whether a vertical or a horizontal shape would be more suitable.
- (2) Bookcases are often used for the display of ornaments, as well as for the storage of books.
- (3) What are the measurements of your books? Write down a list of sizes and then estimate the length of shelving space required.
- (4) Why are bookcases raised from the floor? Would it be more suitable to raise yours on legs or on a plinth?

Vertical shape



Horizontal shape



A bookcase with ornaments and books

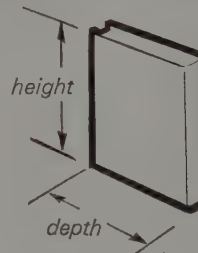


Do ornaments make the appearance less heavy?

Why are the larger books placed at the bottom?

Book measurements

Do you wish to make allowance for books to be added later?



What is the length of shelving required?

Splayed legs

Does this type of leg harmonize with the surroundings?

Vertical legs
Would it be difficult to clean under here?



Inset plinth

Are these books too close to the floor?

Projecting plinth



Try to find out more of the many variations that are possible.

Will this prevent the side from joining other furniture?

5) You may like to include doors in your design. What purpose do they serve?

6) Make sketches of your ideas. Complete bookcases may be drawn, but also draw details of particular parts that interest you specially.

Full size drawings

(1) Begin the drawing of the front and end elevations.

(2) Try to achieve balanced proportions within the limits of your size requirements. Examples of good proportion are 1:2 and 3:5 approximately, but many others are possible.

(3) Place books between your shelves to see if you have allowed sufficient vertical space.

(4) Look at the end elevation. Is your bookcase likely to topple over? Find out from your science books the basic principles of centre of gravity and levers.

Working drawings

(1) Choose your own scale and begin the drawing of the front elevation, end elevation and plan.

(2) Frequently $\frac{5}{8}$ " (16 mm) is found to be a suitable thickness for the carcass and $\frac{1}{2}$ " (13 mm) for the shelving, but this will depend ultimately upon the size of the bookcase.

(3) For the top corners of the carcass a secret dovetail is best, but simpler methods may be used. The shelves are usually jointed by means of a housing. Would the shaping of the front edges improve your design?

A bookcase with doors

Will you use a flush door to hide books in poor condition?



Do glass doors keep out the dust?

Does this break in the line between the carcass and underframing enliven the form?

Bookcase proportions

The length and height can be varied slightly to produce an interesting rectangle

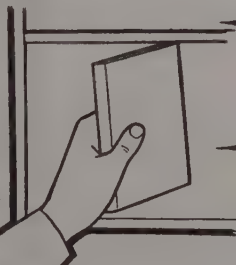


Don't forget to consider the shape of these two rectangles

Why must the leg height be in relation to the carcass size?

Testing with a book

Is it too far to bend to reach the lowest shelf?

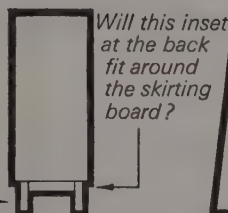


Would a contrasting lining and shelf improve your design?

Have you allowed sufficient space for easy withdrawal?

Considering the stability

Would tall legs make the bookcase unstable? Keep the legs as far apart as possible for good stability



Will this inset at the back fit around the skirting board?

What are the advantages of this taper?

Would heavy books here improve the stability?

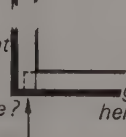
Jointing for carcasses

mitred secret dovetail

This stopped housing joint may also be used for the bottom shelf if the end extends downward

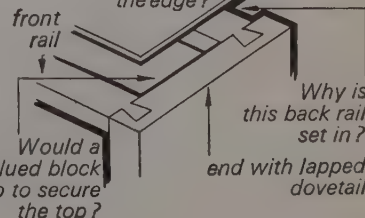


Would a mitred front edge to this lapped dovetail be more suitable in your case?



The simple rail and top board method

If the top is plywood how will you cover the edge?



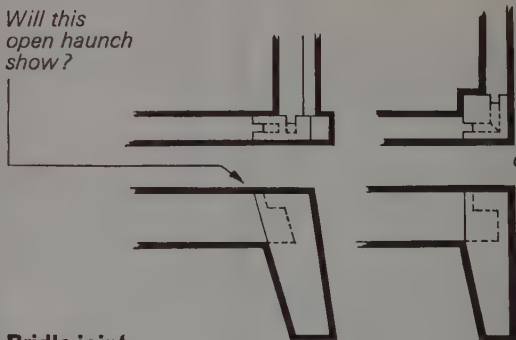
Why is this back rail set in? end with lapped dovetail

Would a glued block help to secure the top?

- (4) Legs may be used to support the carcase, but equally important are the connecting rails. Four main types of underframe are shown here.

Mortise and tenon joints (third angle projection)

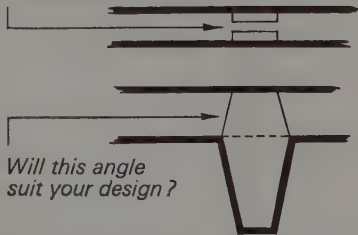
Will this open haunch show?



Is more strength obtained by mitring the tenons?

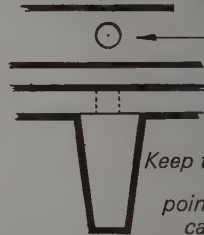
Bridle joint

Does the joint divide the rail into thirds?



Round pin joint

Has the joint reduced the strength of the rail?



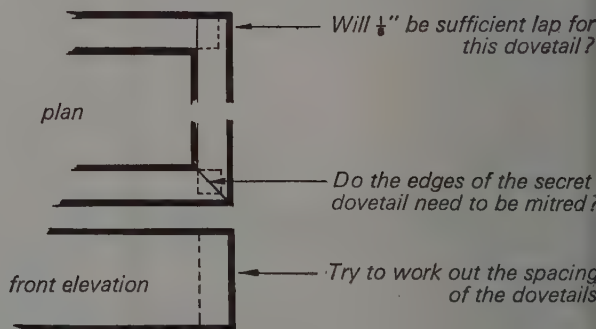
Will this angle suit your design?

Keep the end neat but not too pointed or it will cause damage

- (5) The plinth is a separate box construction.

Metric conversion: $\frac{1}{8}$ " = 3 mm

Plinth joints



- (6) Show the method by which you think the carcass should be fixed to the underframing. It is important to remember that wide boards of solid wood must be allowed to shrink and swell. Why? Find out what happened to the plank chests of the Middle Ages.

- (7) The back may be screwed in a rebate. Would a groove be better?

- (8) If you make the necessary grooves as you construct your bookcase, glass doors can be put in when it is completed. Glass doors are expensive, so first obtain an estimate from your local shop.

Metric conversion: $\frac{1}{4}" = 6 \text{ mm}$; $\frac{3}{8}" = 10 \text{ mm}$; 32 oz = 4 mm

- (9) Check to see that you have included in your drawing the hidden details, dimensions, title, scale and your name.

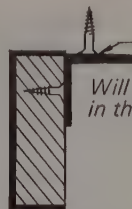
Screwed block

If this wooden block is screwed tightly, will it allow any shrinkage in the carcass?



Stretching plate

Will the screw holes in the metal plate be oval or round?



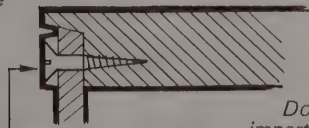
Button

*Why is the top of this button slightly sloping?
What is this small gap for?*



Sectional elevation through the carcass

Could the rebate in the top be reduced?



Do you think a screw cup imparts a better finish to your work?

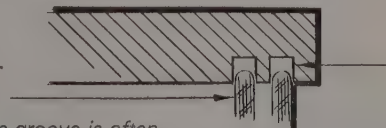
Why doesn't the bottom need to be rebated?



Does a plywood back shrink?

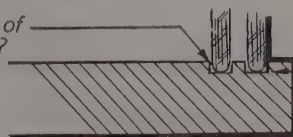
Sliding glass doors

Will you choose $\frac{1}{4}"$ plate glass or 32oz glass?



The depth of this groove is often $\frac{3}{8}"$. Why is this groove twice the depth of the groove below?

Why are the edges of the glass rounded?



Would it be an advantage to have a track for the doors to run on?

Research

- (1) A cabinet standing beside the bed needs to accommodate articles in constant use and also to provide storage space for items used less frequently (e.g., books and toys). Consider what items you wish to keep in the cabinet and make the necessary measurements.
- (2) Decide on a height for the cabinet by estimating a comfortable reach from the bed. Determine the width and depth, taking into account not only the measurements of the articles to be placed inside the cabinet and, of course, its general appearance, but also the range of timber sizes available.
- (3) Work out the most suitable arrangement of legs, shelves and doors to meet your requirements.

- (4) The legs can be a strong feature, in their own right or as part of the carcass construction.

- (5) Make freehand sketches of a number of bedside cabinets and then develop the one that will most suit the décor of your bedroom.

Basic requirements



Are the top and shelf placed at a convenient height for current items?

What width and depth is required for articles less frequently used?

Why is it necessary to raise the cabinet clear of the floor?

Cabinets with interchangeable features

Would dust collect in this open shelf?

What articles are best kept in a drawer?

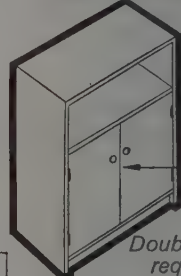
Would a carcass side fitting to the floor make cleaning easier?



Do short legs make the carcass more clearly defined?



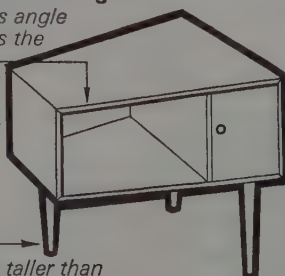
Is a flap likely to tip the cabinet forwards?



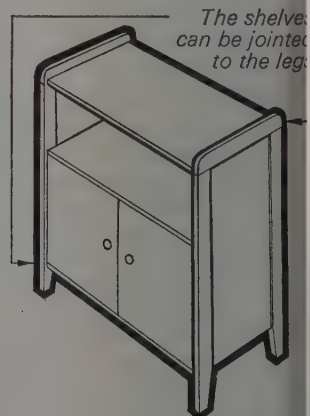
Double doors require less space for opening than single doors.

Emphasis on legs

Will this angle towards the bed make it easier to get a book out?



Should these legs be taller than the height of the carcass?



The shelves can be jointed to the legs.



Can you give the leg some support by including a rail underneath?

Is the appearance improved by covering the top of the leg with the rail?

A new headboard may need to be fitted for this design

Full size drawings

- (1) Begin the drawing of the front and end elevations. Include a plan if this will be of assistance to you in developing the design.
- (2) Experiment with different sizes and shapes before you make a definite choice of design.
- (3) By using woods with contrasting colour and grain, greater importance may be given to selected features. Use coloured chalk to test the effects of proposed contrasts.

Working drawings

- (1) Calculate a suitable scale and begin the drawing of the front elevation, side elevation and plan.
- (2) The thickness of the carcass for a bedside cabinet is often $\frac{3}{8}$ " (16 mm) or $\frac{1}{2}$ " (19 mm). Shelves are sometimes a little thinner.

Front elevation

Will these different sized shapes add variety?

Is this area improved by the use of two doors?



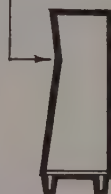
Vary this position of the side and shelf to form a pleasing harmony

Will the height of the legs alter the proportion?

Side elevations

Is the depth sufficient for the items you intend to accommodate?

Does a taper give greater stability?



Would this make a convenient break for the shelf?

Contrasting woods

Does this small intense area balance the large surrounding area?



Inlaid edges emphasize the limit of the area involved

Carcass joints (front elevations)

Mitred secret dovetails' keep a sharp corner



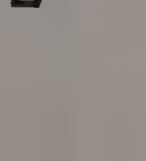
The side is jointed to the bottom with a lapped dovetail



How will this top be jointed to the cross rail?



Will single or twin tenons be used for jointing the bottom to the leg?



How will this thin top board be secured?



Front and back rails are lap dovetailed to the side

A stopped housing joint is often used for a solid shelf

How would you joint a front board in here?

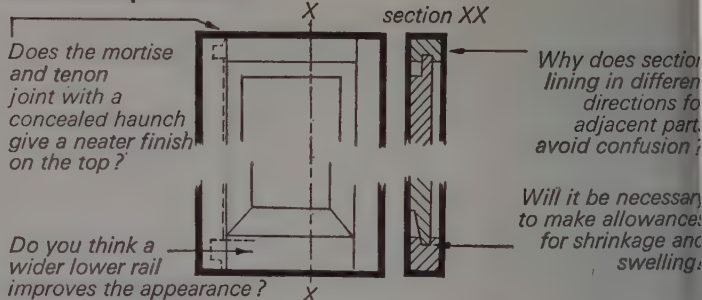
An end frame is formed by tenoning the legs to the rails.

- (3) For further details concerning legs, plinths and backs see pages 76 and 77.
- (4) The traditional frame and panel door may suit your design, but it is more usual to have a dust-free flush door constructed from plywood, laminboard or blockboard with veneered surfaces and solid wood lippings around the edges.

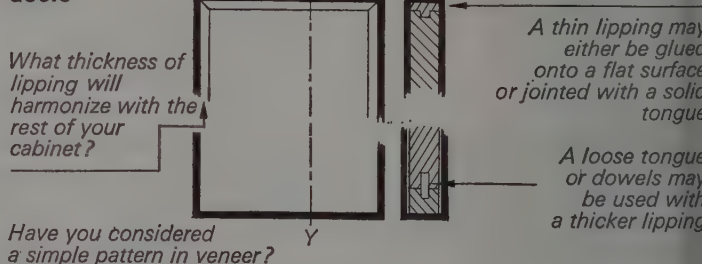
- (5) Suggestions for handles and drawers may be seen on page 94.
- (6) Decide upon the best position for the door and then work out the hinge placements.

- (7) Before removing your drawing from the board ensure that you have included hidden details, dimensions, the title, scale and your name.

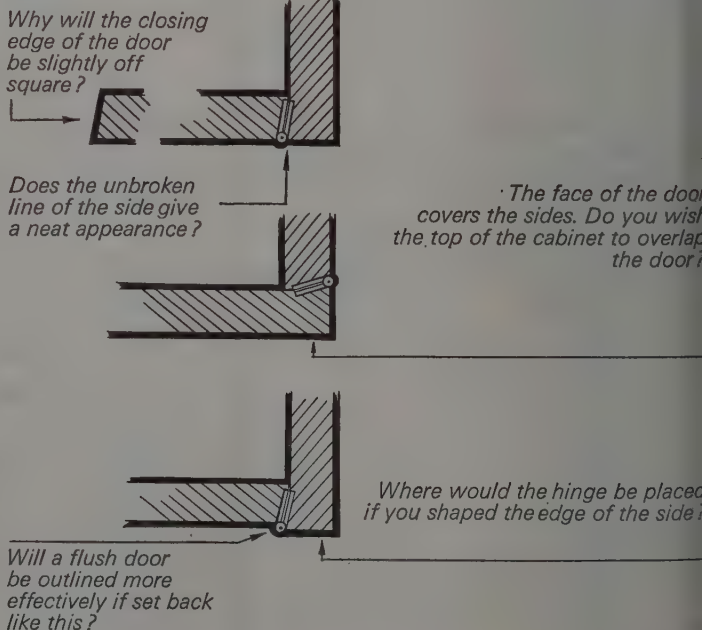
Frame and panel doors



Plywood or laminboard doors



Hinging positions



Research

- (1) You are not likely to make a whole set of dining chairs, but you will find that a single chair is often useful in places other than the dining room: in the hall, for example, or in a bedroom, or for use with a bureau. As you proceed with your design constantly keep in mind this eventual room setting. Observe and try out chairs whenever possible.
- (2) The basic requirements for a dining chair are the provision of a comfortable seat and some support for the back. From a good dining chair, make the four measurements marked in the diagram, and then alter them slightly if you consider this necessary. Remember that other people will be using your chair too.
- (3) Consider possible variations in the angle of the back leg and the seat position.

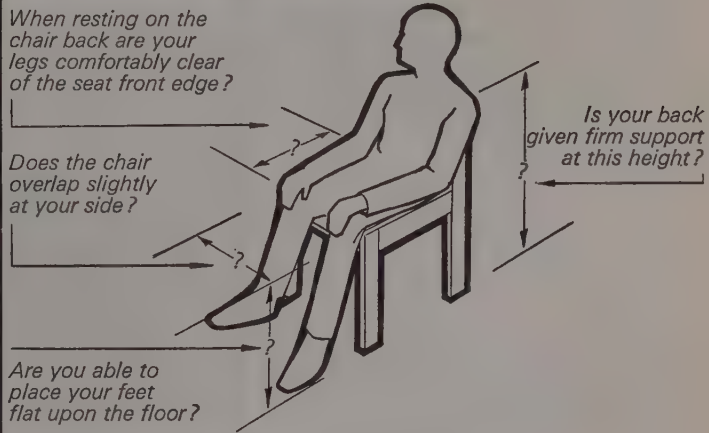
Calculating the overall measurements

When resting on the chair back are your legs comfortably clear of the seat front edge?

Does the chair overlap slightly at your side?

Are you able to place your feet flat upon the floor?

Is your back given firm support at this height?



Variations of back rake and seat position

Does this slight slope backwards make the chair more comfortable?

Note how the seat and back units fit between the side frames and project at the ends

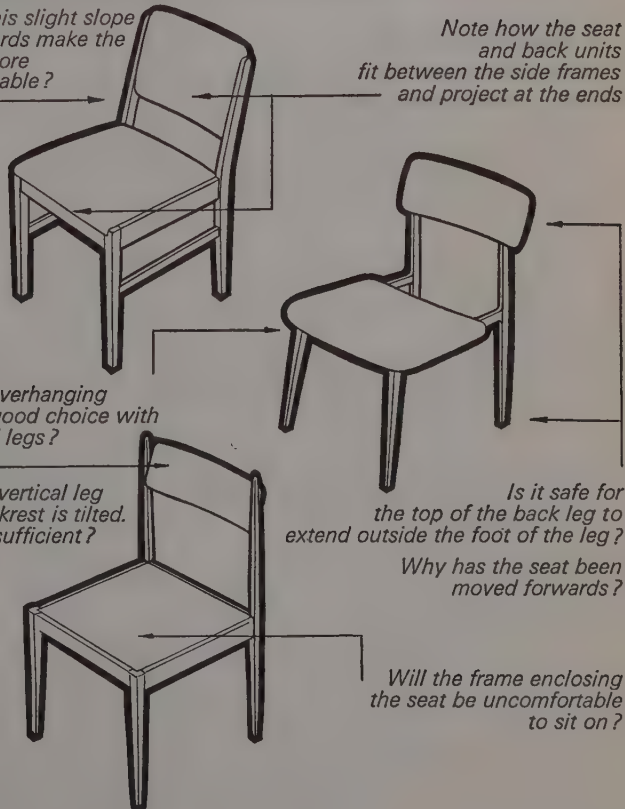
Is the overhanging seat a good choice with splayed legs?

With a vertical leg the backrest is tilted. Is this sufficient?

Is it safe for the top of the back leg to extend outside the foot of the leg?

Why has the seat been moved forwards?

Will the frame enclosing the seat be uncomfortable to sit on?



- (4) The type of back chosen must harmonize with the rest of the chair and with the furnishing scheme of the room where it will be used. Three types of back are illustrated. Can you think of other suitable backs?

- (5) Make a number of preliminary sketches of dining chairs, choose the style you prefer and, as you proceed to the next stage, be prepared to make modifications.

Full size drawings

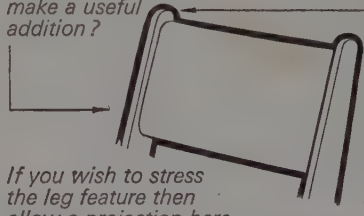
- (1) Begin the drawing of the front elevation, side elevation and plan. A realistic impression may also be obtained by making a full size cut-out in card; but if your design incorporates untried features a mock-up in softwood is advisable.

Metric conversion: 3" = 76 mm; 3½" = 89 mm

- (2) Consider each part carefully, paying attention to the purpose and general appearance of the chair.
- (3) The shape of the leg is all important in a chair and often determines the overall design.

Upholstered frame fitted inside

Would arms make a useful addition?



If you wish to stress the leg feature then allow a projection here

Shaped backrest

This could be secured with screws or bolts

Would a shaped dowel be needed on top for decoration?

Do you wish your backrest to retain a laminated wood finish or to be upholstered?



Chair elevations (third angle projection)

Do you wish the back to emphasize horizontal form like this, or vertical form?

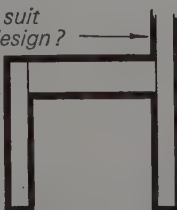
A leg thick at the joint may be tapered down for the back

Would extra strength be gained with the addition of a rail?

Parallel legs

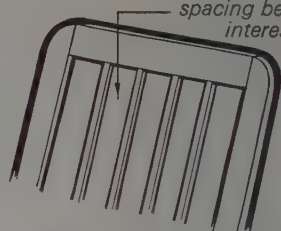
Do parallel legs suit a right-angled design?

Could this be continued upwards to support an arm



Jointed rails and splats

Would unequal spacing be more interesting?



Shaped legs and rails often produce a more delicate effect than this

It would be economical to keep the angle between the limits of a 3"-3½" width boards

Have you allowed sufficient width for the greater strain at this point?

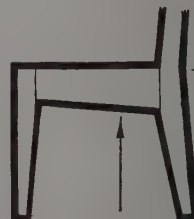
Would a rail above centre be neater than one below?

Tapered legs

Is a corner necessary here?

What is the advantage of this slanting edge?

Tapered legs could be vertical or splayed



- (4) Many chair seats narrow towards the back, necessitating angled joints; but other arrangements are possible.

Working drawings

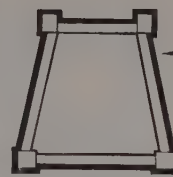
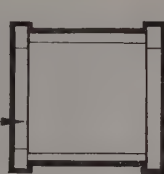
- (1) Begin the drawing of the front elevation, side elevation and plan. The plan should be full size so that angles and measurements may be taken from it. The side elevation of a raked back leg should be cut out and used as a template.
- (2) Mortise and tenon joints may be used for the legs and rails, depending upon size and position. Sometimes a dowelled joint is used for simplicity.

Right-angled seat plan

What is a good thickness for a robust chair?

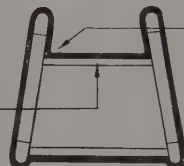
Will the seat fit inside or overlap?

Is this a good rail position for seat set forward?



angled joints on side rails

Why is this leg sometimes not the same section as the back leg?



angled joints on front and back rails

Why does a shaped edge suit this construction?

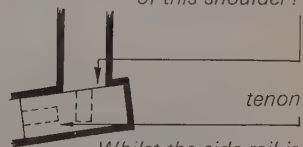
Corner joints in plan

If the tenon were longer could the dowel pass through it?

dowel



Which tool will you use for marking the angle of this shoulder?

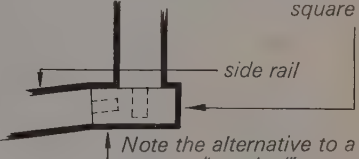


tenon

What is the advantage of the "cranked" tenon?



Whilst the side rail is angled the back leg remains square



side rail

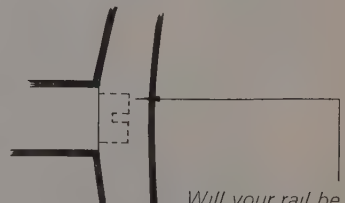
Note the alternative to a "cranked" tenon

Corner joints in elevation

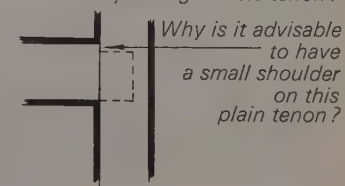
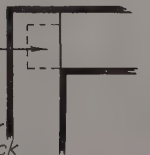
If your seat frame requires a rebate how will it affect this concealed haunch?



Will your rail be wide enough to employ the very strong double tenon?



Why is it advisable to have a small shoulder on this plain tenon?



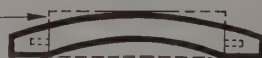
$\frac{3}{8}$ " is about the minimum length for the tenon. How thick will the leg need to be?

Metric conversion : $\frac{7}{8}$ " = 22 mm

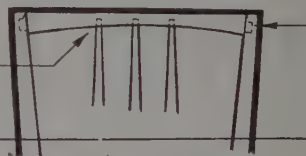
- (3) Variations of the mortise and tenon joint may have to be used on framed backs. Applied backs will have to be screwed on. Keep your eyes open for ideas that you can use for this part of your design.

Joints for the back (third angle projection)

Will this shaping be done before or after cutting the tenons?



Should these round splats have a shouldered joint?



What alternatives are there to the haunched mortise and tenon joint?

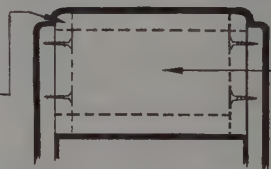
Will you need to screw the frame before adding this backing?



frame
foam
fabric

Will rubber webbing be necessary?

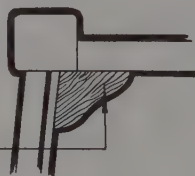
Is a bridle joint suitable here?



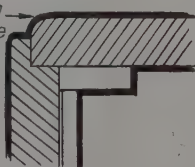
- (4) The seat of a dining chair quite often consists of a frame or base which is upholstered and then placed in position. (In some of the drawings the seat is not shown.)

Seat fitted into rebates

What is the reason for the grain direction of this corner brace?

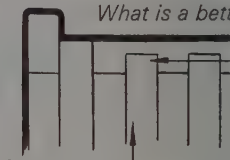


How high will the foam project above the rails? What thickness ensures comfort?

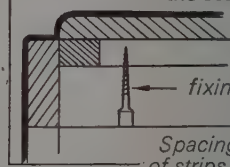


Seat supported by cross rails

What is a better than fixing by tacks?



By adjusting the tension of the rubber webbing you can make the seat hard or soft

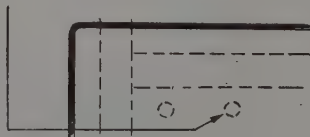


fixing screw sunk into cross rail

Spacing and number of strips are important too

Overlapping seat superimposed

Why are holes through the laminated seat base necessary?



A tee-bolt could be used through the rail to pull down a plywood base



- (5) Insert the hidden details and dimensions on your drawing. Make sure the title block includes your name.

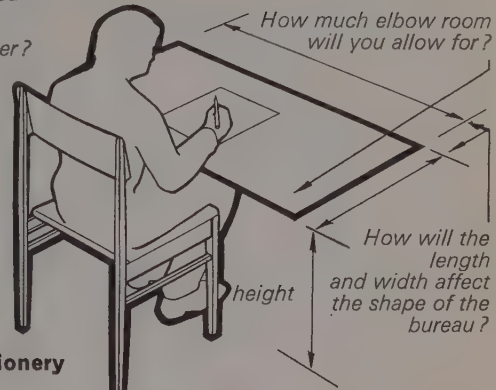
Research

- (1) A bureau must provide a good surface for writing on and space for the storage of writing materials. It is usual for the writing surface to be in the form of a drop front. Storage is provided by means of compartments, shelving or drawers. Are there any additional purposes you wish your bureau to fulfil?
- (2) Sit on the sort of chair you would use at a bureau and measure a suitable height and size for the writing surface. It may be necessary to modify these sizes as your design proceeds.
- (3) Write down the sizes of stationery materials likely to be stored in the bureau. Why are these usually placed just above the writing surface?
- (4) Will you need to keep other items in your bureau?

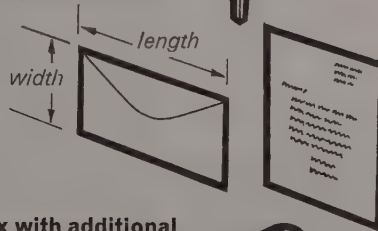
Calculating the writing surface

What space is required around the paper?

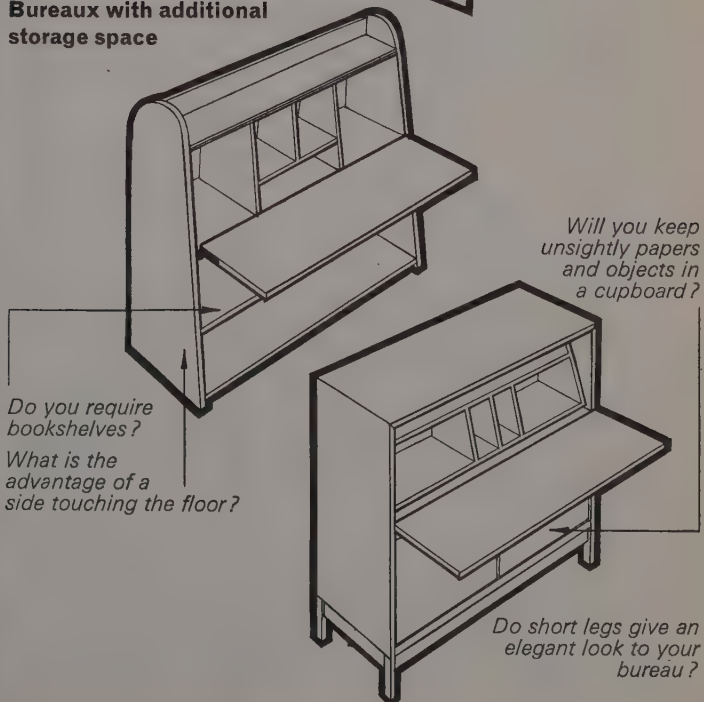
Or around a typewriter?



Measuring the stationery



Bureaux with additional storage space



- (5) How much leg-room do you want? Are you prepared to sacrifice storage space for additional leg-room?

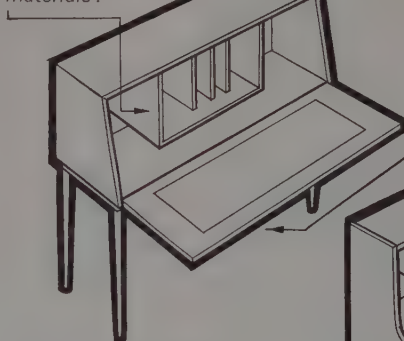
- (6) Next consider the stability. A heavy bureau with a low centre of gravity will withstand strong pressure on the flap; but a light bureau with a high centre of gravity will withstand light pressure only and will easily topple over.

In order to calculate the force exerted by pressure on the flap, experiment with two boards, as in the diagram. Make a weighing of the estimated load: the legs, carcass and contents. By how much must this load exceed the force exerted on the flap? Don't forget to allow for the weight of the flap itself.

- (7) Make sketches of several different types of bureau and then develop one of them. Show the arrangement of the inside.

More leg-room, less storage space

Is this sufficient volume for your writing materials?

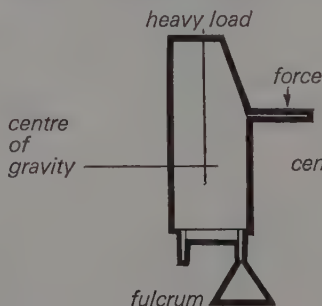


*Good leg-room
A wall unit would eliminate legs altogether*

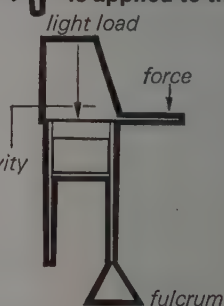
More storage space, less leg-room

*How much overhang is necessary for comfort?
What items are best kept in drawers?*

Remains stable when a strong force is applied to the flap



Remains stable when a weak force is applied to the flap



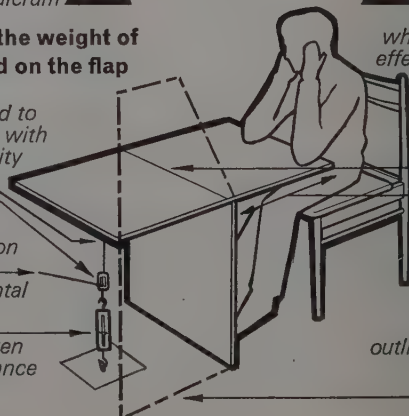
Calculating the weight of force exerted on the flap

string attached to a point in line with centre of gravity

pulley

Partner pulls on string to keep flap in horizontal position

Recording taken on spring balance



what would be the effect of a narrower flap

*boards lightly nailed
outline of imaginary bureau*

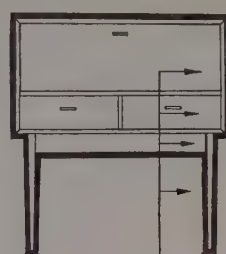
Full size drawings

- (1) Begin the drawing of the front and end elevations.
- (2) Within the limits of your basic requirements try to make the shapes you design pleasing and elegant.
- (3) Consider various types of leg and rail, but remember that the sizes used must allow for strong joints and a firm underframe (see pages 33 and 60).
- (4) The stationery compartment may be treated as a separate construction or may be jointed into the carcass.

Elevations in outline (third angle projection)

Does this slope make the top appear less cumbersome?

Keep the legs well apart for stability



Why are the handles and drawers placed symmetrically?

Why are these four long rectangles of different widths?

Compartments jointed in

Are letters better stored flat or on edge?

Would a long space be useful? For a typewriter perhaps?



Compartments as a separate construction



Will screwing be used here?

Try a variety of interesting and useful arrangements

Working drawings

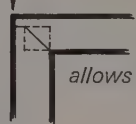
- (1) Begin the drawing of the front elevation, sectional end elevation and plan.
- (2) When deciding on the corner joints and the thickness of the carcass, remember that your guiding considerations must be neatness and strength. Give careful thought to the edge shaping.

Carcass joint variations

The mitred secret dovetail eliminates end grain altogether



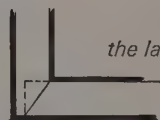
A double lapped dovetail allows the corner to be shaped



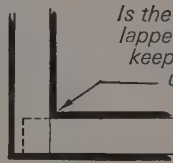
If the mitre is to reach the corner, the lapped dovetail's must first be set back slightly



Mitre finishes in line with the lapped dovetail



If the side projects upwards a stopped housing joint could be used. Would a stopped dovetail housing be better?



Is the edge of this lapped dovetail in keeping with the upper joint?

(3) For details of underframe constructions and methods of fixing see pages 34 and 77.

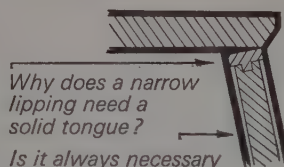
(4) Most modern flaps are made from veneered laminboard or blockboard with a lipping; but the frame and panel method may be used.

The flap is usually hinged and held in position with a type of cabinet stay. But other methods are also used.

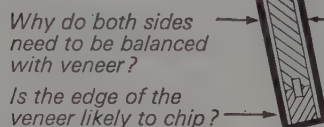
Veneered laminboard flaps

Frame and solid panel flaps

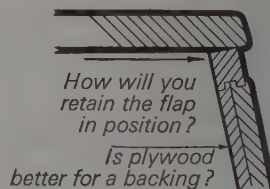
(part vertical sections)



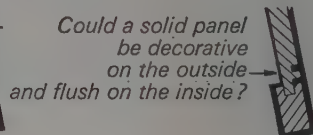
Is it always necessary to have a leather writing surface?



Is the edge of the veneer likely to chip?



Is plywood better for a backing?



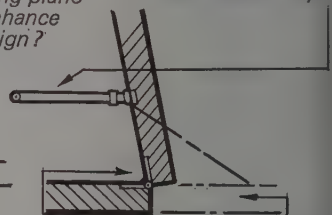
Hinging and supporting the flap

Later make an accurate drawing to determine the position of this rule-joint stay and the locus of the knuckle

With the flap open there will be a step here. Is this satisfactory?

Will a long piano hinge enhance your design?

Is there free space for this cabinet stay?



Would a level carcass and flap serve a useful purpose?

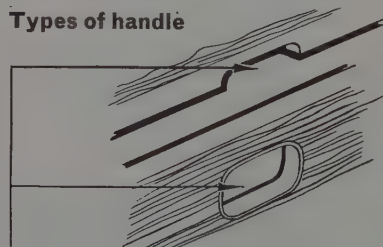
Will back flap hinges be visible in the closed position?

Does the overhang on this rebated joint improve the appearance?

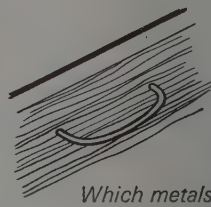
Pivots must be placed accurately to allow flap to open in a level position.

(5) The handle must be in keeping with the design as a whole and yet still be practical.

Types of handle



Scooped out handles maintain a flush surface



Which metals would be suitable for a delicate looking handle?

- (6) The back may be rebated or grooved into the carcass.

- (7) The compartments for the stationery will be made from wood much thinner than that used for the carcass; consequently there will be some through joints.

- (8) If drawers are to be included revise the construction (see pages 93 and 94).
 (9) Have you considered using contrasting woods? For example, you could have a light-coloured interior, or a dark lipping to the flap. In using contrasts aim to enhance the qualities of your design and to avoid disharmony.

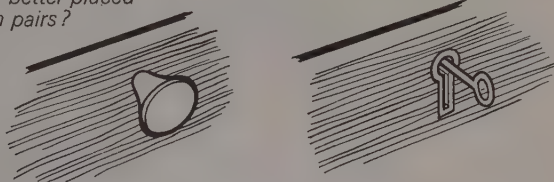
Metric conversion: $\frac{3}{16}$ " = 5 mm

- (10) Check your drawing thoroughly before removing it from the board. Have you included the title, scale, dimensions, hidden details and your name?

Types of handle

Would round knob handles be better placed singly or in pairs?

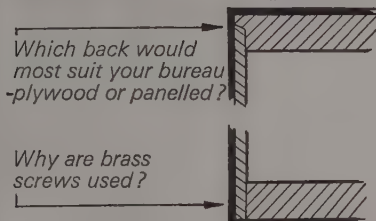
The key in a lock gives the least broken surface but is this a satisfactory handle?



Rebated back

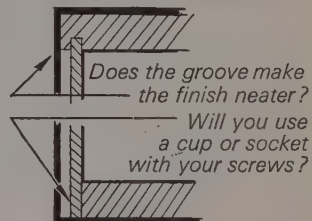
(part sectional elevation)

Grooved back



Which back would most suit your bureau -plywood or panelled?

Why are brass screws used?



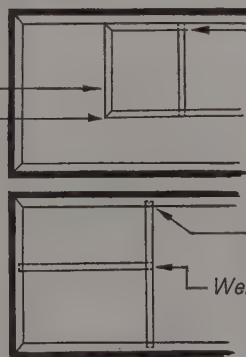
Does the groove make the finish neater?

Will you use a cup or socket with your screws?

Joints for the compartments

How can a shaped end improve the efficiency?

Could the through dovetails have a mitred front edge?



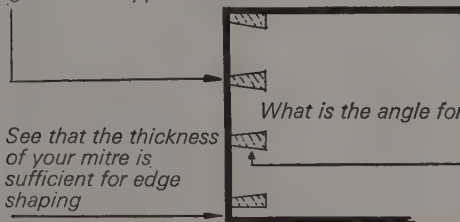
Will this edge act as a stop for the flap?

Is one-third a suitable depth for this stopped housing joint?

Well-spaced through tenons will not weaken the partition

Spacing through dovetails

Will $\frac{3}{16}$ " width here give a neat appearance?



See that the thickness of your mitre is sufficient for edge shaping

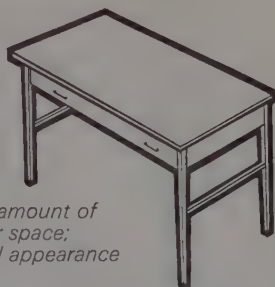
What is the angle for dovetails in hardwood?

Writing tables, desks and dressing tables

Research

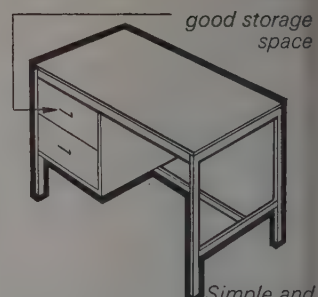
- (1) The purposes of these tables are very similar. They all provide a surface for working on or placing things on and, in addition, space for storage.

Writing table



Small amount of drawer space; refined appearance

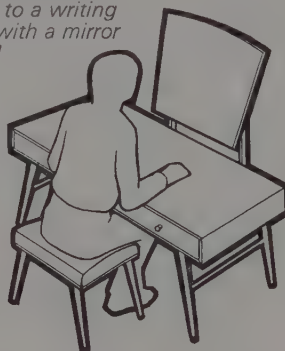
Desk



Simple and practical appearance

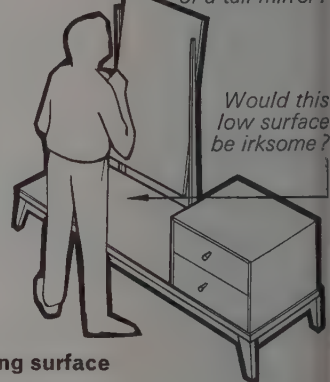
Dressing table to sit at

See how similar this is to a writing table with a mirror added



Dressing table for standing at

What is the advantage of a tall mirror?



Would this low surface be irksome?

- (2) Determine the height you require. A comfortable working height = height of chair or stool + allowance for knees + slight space above knees for movement + thickness of drawer (if needed) and top.

Metric conversion: 2" = 51 mm; 3" = 76 mm

Estimating the height of the working surface

Would a deeper drawer interfere with the knee space?



Should the elbow be slightly above the table?



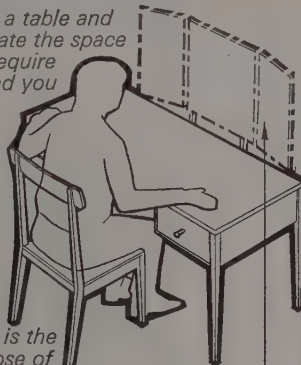
For typing, lower the surface by 2 to 3 inches or raise the seat height if there is room for the knees. Why is this necessary?

(3) Taking account of the space available in your house, estimate the approximate length, depth and storage required.

(4) These pieces of furniture are often combinations of table, carcass, stool and framed constructions. Many variations are possible.

Small drawer capacity

Sit at a table and estimate the space you require around you



What is the purpose of a side mirror?

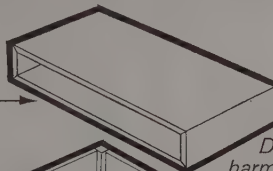
Large drawer capacity

Clothes take up a lot of room, but would you need as much as this in a desk?

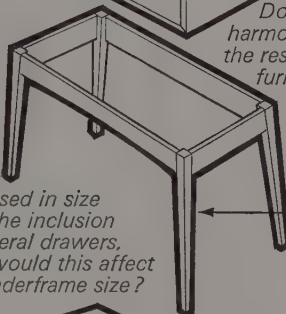
Are drawers of different sizes useful?



Carcass and stool construction

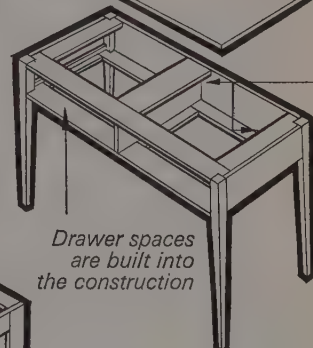
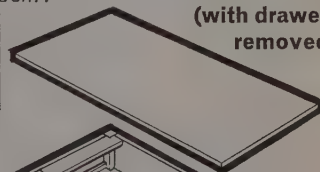


Do splayed legs harmonize with the rest of the furniture in the room?



If the box is increased in size with the inclusion of several drawers, how would this affect the underframe size?

Table construction (with drawers removed)

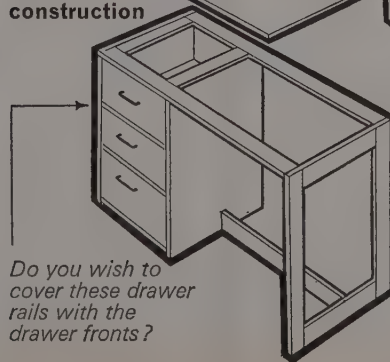


Drawer spaces are built into the construction

Carcass and framed construction



Do you wish to cover these drawer rails with the drawer fronts?



Why is a complicated system of runners, kickers and guides used for supporting the drawer?

The framed end will lighten the appearance and yet maintain good support

The tops are sometimes hinged for special purposes.

- (5) Try sketching a number of designs before developing the one that pleases you most.

Full size drawings

- (1) Begin the drawing of the front and end elevations, but be prepared to experiment and rearrange as you proceed.
- (2) You should aim to produce a table that is well proportioned, balanced and stable, but not necessarily symmetrical. A contrasting wood can be used to emphasize a particular feature.
- (3) A good average thickness for the carcass is $\frac{3}{8}$ " (16 mm). Legs may vary from $1\frac{3}{8}$ " \times $1\frac{3}{8}$ " to $1\frac{7}{8}$ " \times $1\frac{1}{8}$ " (35 \times 35 to 48 \times 29 mm), or even $1\frac{7}{8}$ " \times $1\frac{7}{8}$ " (48 \times 48 mm) depending upon the amount of support given by the rails. Examples of leg shapes are shown on page 33.
- (4) Make alterations to your drawing, if necessary, combining individual parts to create a pleasing whole. For a dressing table it is particularly important to relate the shape and size of the mirror to the form of the table itself.

Top hinged at the front to provide an angled drawing surface



Where will you place the brushes and drawing instruments?

Study the "deck-chair" method of support. Or perhaps you prefer a metal fixture?

Half top hinged at the back



What use would you make of this side?

compartment for dressing-table requisites

Would this raised edge hinder you when writing?

Symmetrical

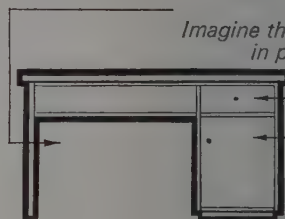
Each side of the centre line is identical



The sides of these well-proportioned rectangles have a ratio of 3:5. Does this have a unifying effect?

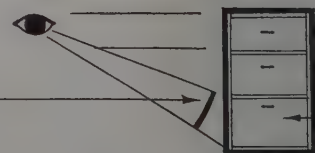
Balanced

Imagine the chair in position.



Do these short solid areas balance the longer open spaces on the other side?

Stable



Areas below eye level will sometimes appear to be foreshortened

Does this larger, heavy drawn give the appearance of stability at the base?

Working drawings

- (1) Calculate a suitable scale and then begin to draw the front elevation, end elevation and plan. Include sectional views where they will help to make your ideas more clearly understood.
- (2) Suggestions for the construction of the box type of carcass may be seen on page 87, and for the stool construction on pages 25 and 34. Table construction presupposes one or more drawers, and for first class results traditional procedures are recommended. Nevertheless, many alternative modern methods are very sound.

Framed constructions may be used on their own or in conjunction with carcass and drawer constructions. Care must be taken to allow adequate space for jointing, especially at the corners.

Table construction (third angle projection)

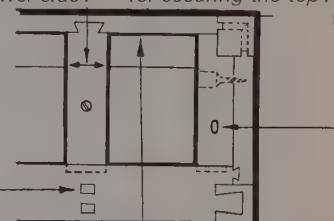
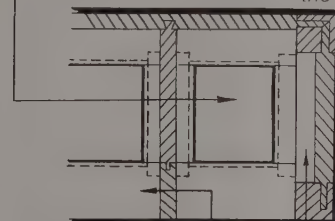
Section AA

Is it always necessary to include a dust panel?

How far does the edge of the kicker need to overlap the drawer side?

Plan (top removed)

How many oval holes will you need in the kicker for securing the top?



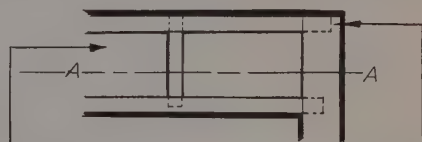
Will it be sufficient just to glue the drawer guides?

Why is it important for the drawer framing to be made in hardwood?

Why are the tenons of this centre division placed crossways?

A button could be used here for fixing a solid top, but how would you secure a laminboard top?

Front elevation (top removed)

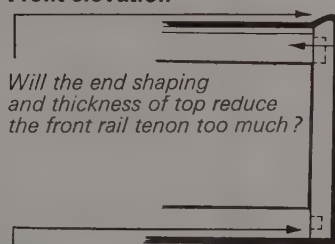


Consider how the runners, guides and kickers maintain drawer alignment with the opening

Will these lapped dovetails interfere with the tenons on the end rail?

A typical framed construction

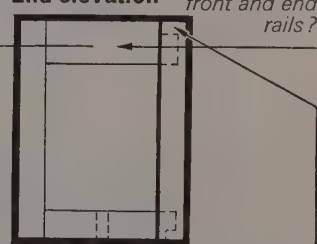
Front elevation



Will the end shaping and thickness of top reduce the front rail tenon too much?

Can you think of ways of strengthening the tenon on this cross rail?

End elevation



Is it neater to line up the front and end rails?

If a haunch were included would shaping on the inside expose the joint?

- (3) Distinct characteristics of drawer construction have been evolved over the centuries. If these are disregarded the result will often be second-grade work.

- (4) Drawers may be opened either by pulling on a cut-out portion of the front itself or by pulling on a handle that protrudes.

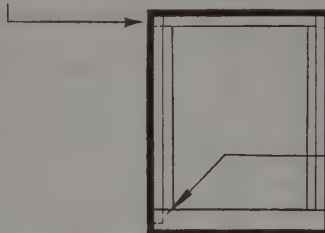
- (5) A number of suggestions for shaping the edges of the top and securing it in position are given on pages 33 and 77. What surfaces will be suitable for the top? Try to adapt to your own needs ideas that you have seen used elsewhere and that appeal to you.

- (6) Do not forget to include on your drawing the hidden detail, dimensions, title, scale and your name.

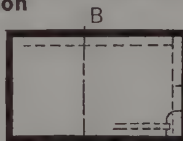
Drawer construction (third angle projection)

Plan

Why is the through dovetail a good choice for the back corners?



Front elevation



The drawer slip takes the groove for the bottom, but why is it also important to increase the area upon which the drawer slides?

Does the lapped dovetail resist the pulling strain and yet remain concealed from the front?

The weight of the drawer can be reduced by using thin sides

Have you allowed sufficient thickness at the front to withstand the pull and take the groove for the bottom?

The rounded side may help you to insert and slide the drawer more easily, but why is the end lower?



(section BB)

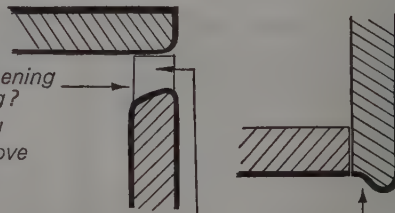
If a solid base is used what provision will you make for shrinkage?

Why must a lapped dovetail cover this groove?

Handles cut into the drawer front

Should this opening have a backing?

Will your hand come from above or below the drawer?



Protruding handles (sectional views)

Your handle could be screwed or tenoned and wedged—study the details



Many shapes are possible but why is it usual for a finger and thumb pull to be wider on the outer edge?

Problems in design

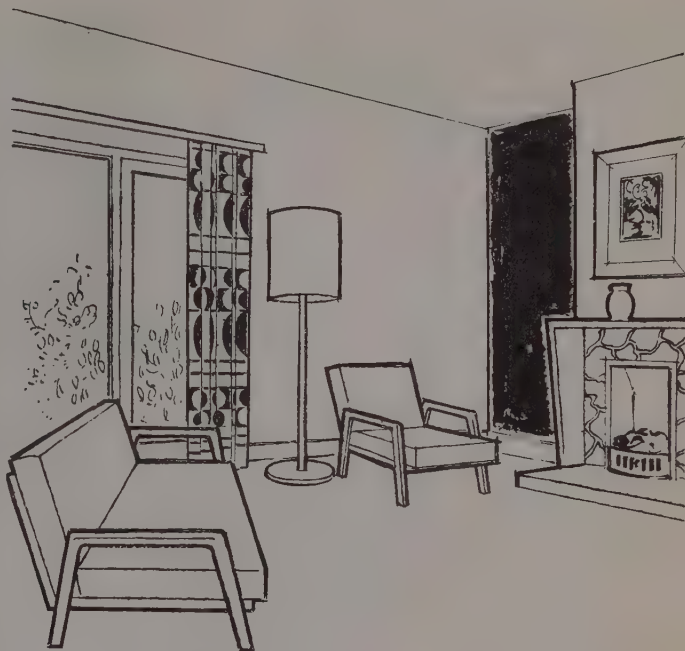
Articles of furniture should be so designed or chosen that they harmonize with the setting in which they are to be placed. The following problems are intended to give practice in combining attention to function with awareness of atmosphere and style.

Study the illustration and read the statement of the problem carefully. Give yourself plenty of time to think. Refer to the appropriate programme for a detailed consideration of the article of furniture required. If possible, look at similar furniture in exhibitions, shops and homes, and make notes and sketches. Never attempt to copy a piece of furniture completely, but pick out pleasing and interesting features and combine them intelligently with ideas of your own.

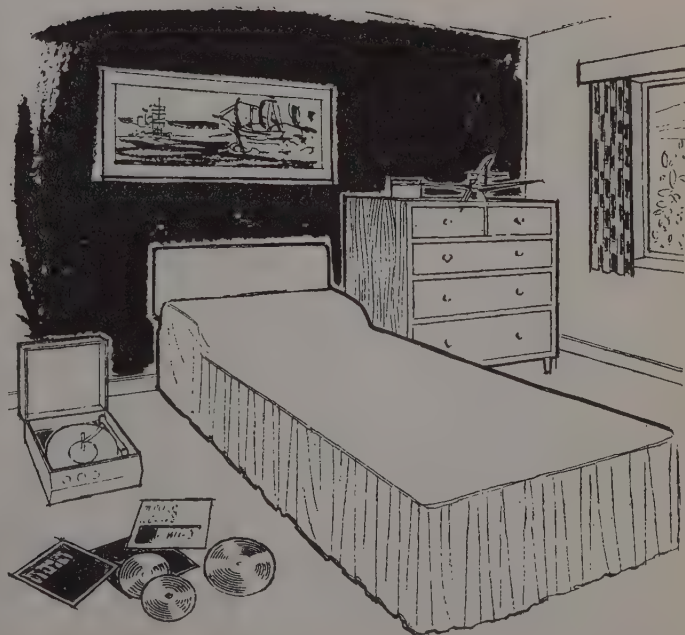
You should never try to disguise the main purpose of the article you design. A table lamp, for example, should be made from well-shaped pieces of material, all contributing to the efficient solution of the problem of providing the right amount of light in the right place. If you attempt to make it look like a toy, or if you try to make it fulfil two purposes, then a vulgar compromise will result.

After due attention has been paid to the main function of the article, then its general appearance can be modified to link it with its setting. Different items of furniture in a room do not need to be exactly the same in detail, but they should have a number of aspects in common, so that a unified and harmonious atmosphere is created.

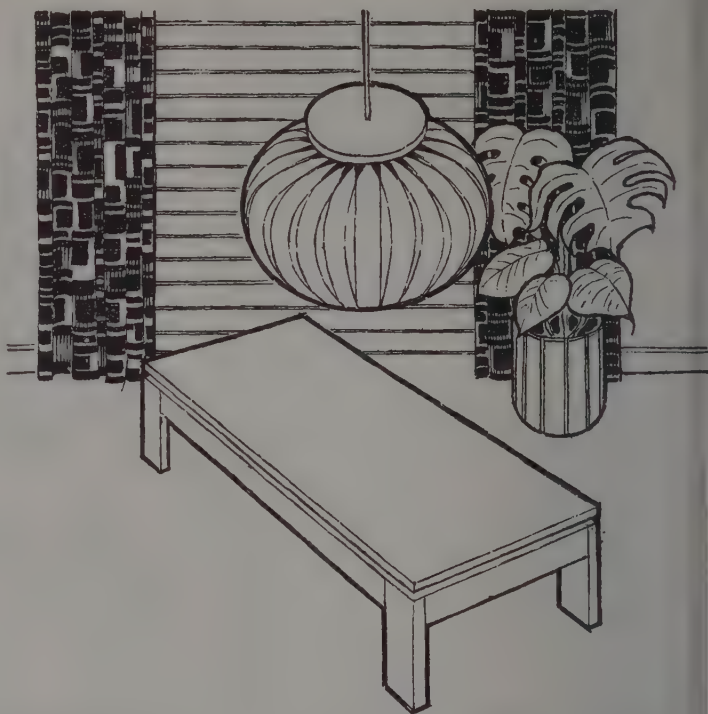
1. The lounge suite illustrated here has wooden arms and legs made in afrormosia, and foam seats and backs covered with a green and yellow flecked tweed. The remainder of the room is in matching contemporary style. Design a coffee table that will harmonize with this décor. (See page 32.)



2. Design a pleasing piece of furniture that will hold the record player and provide storage space for records in this bedroom. The records measure 7" and 12" (18 cm and 30 cm) in diameter, and the player is $7\frac{1}{2}$ " high \times $15\frac{1}{2}$ " wide \times $16\frac{1}{2}$ " deep (19 \times 39 \times 42 cm). The chest of drawers and the divan headboard are made in light oak. (See page 63.)



3. You have been asked by a relative to make an easy chair to harmonize with the style of furnishing illustrated here. Design such a chair and prepare complete working drawings. (See page 70.)

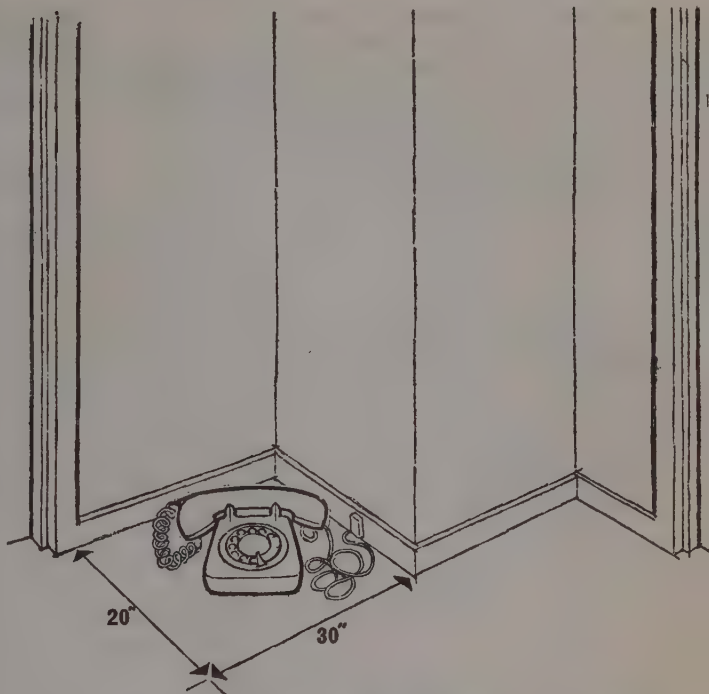


4. Design a bookcase to stand in the 5' (152 cm) space shown in the illustration. You must allow room for a small set of encyclopaedias 9" high \times 6 $\frac{1}{4}$ " deep (23 \times 16 cm) and requiring 18" (46 cm) of shelf space. Also allow for a few selected pieces of china and glassware. (See page 74.)

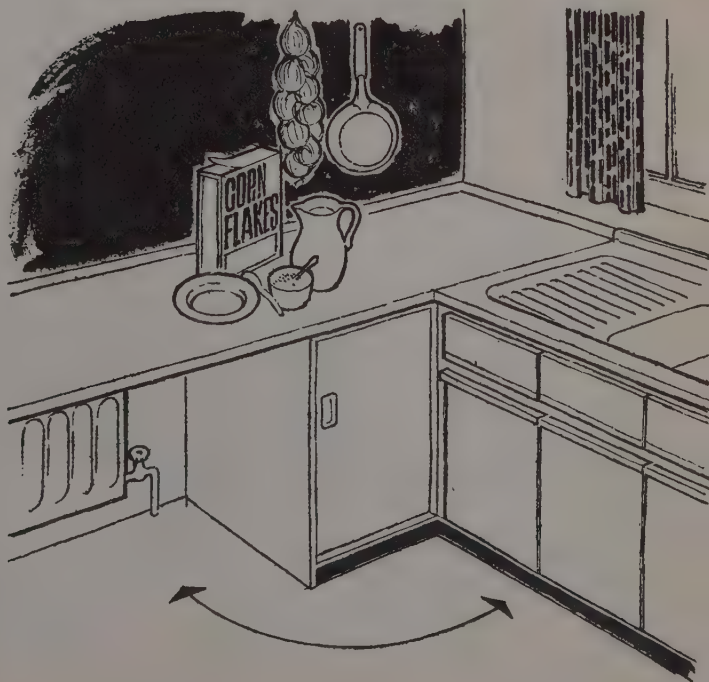


5. This is part of the hall in a new house where the telephone has just been installed. Design a suitable piece of furniture to support the phone in this corner recess. If desired, ornaments or plants may be incorporated in your design. (See page 56.)

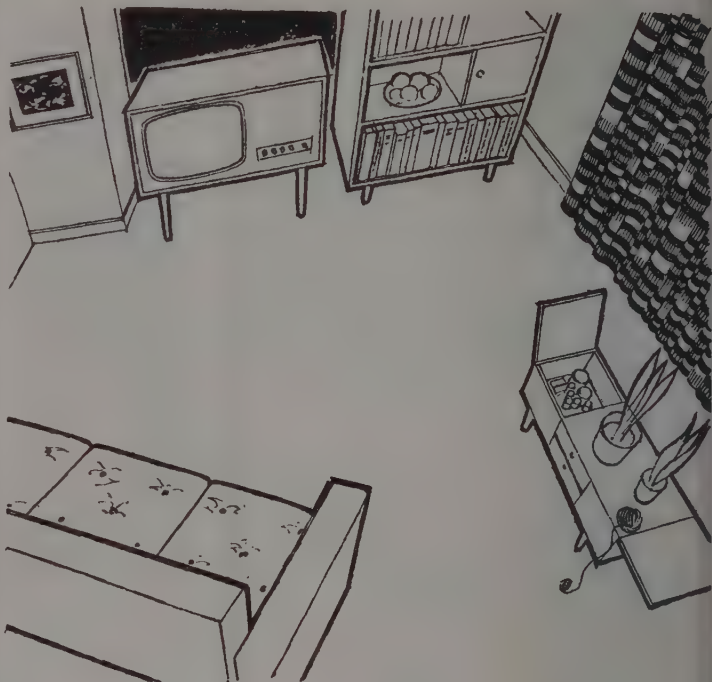
Metric conversion: 20" = 51 cm; 30" = 76 cm



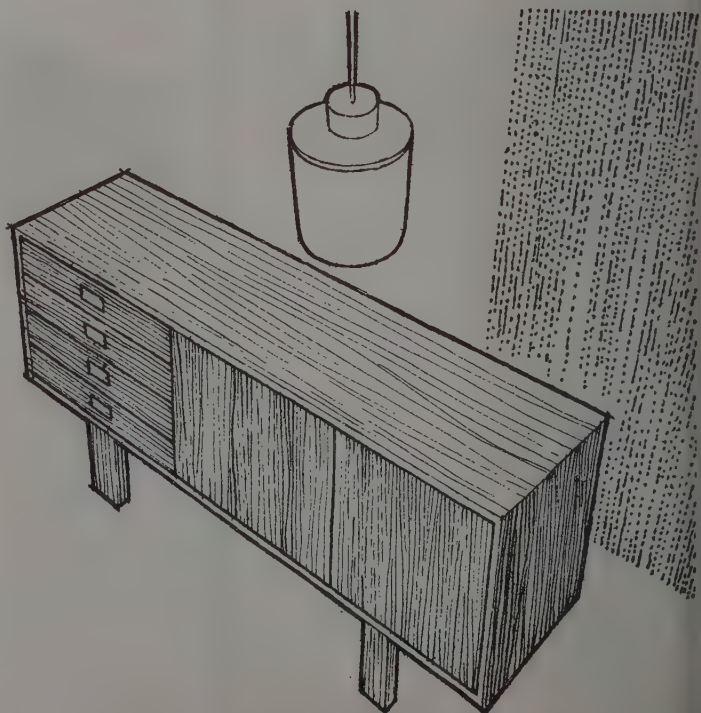
6. Design a kitchen stool to be used at this sink. It will also be used at the breakfast bar, under which it could be stored. The height of the draining board is 36" (91 cm). (See page 22.)



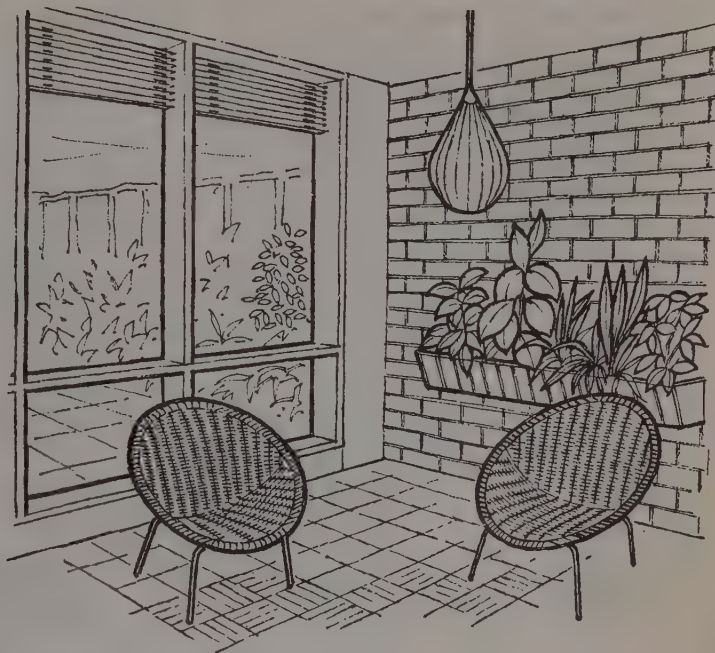
7. Design an easy chair for your mother from which she may use her needle-work cabinet and also watch television. The settee is upholstered in black leather and the curtains are of patterned linen. The floor is covered with a deep-pile fitted carpet, mustard yellow in colour. (See page 70.)



8. Design a matching table lamp and fruit bowl to be placed on this teak sideboard. The lamp will be used for subdued background lighting and the bowl mostly for a selection of apples, oranges and bananas. (See pages 16 and 19.)

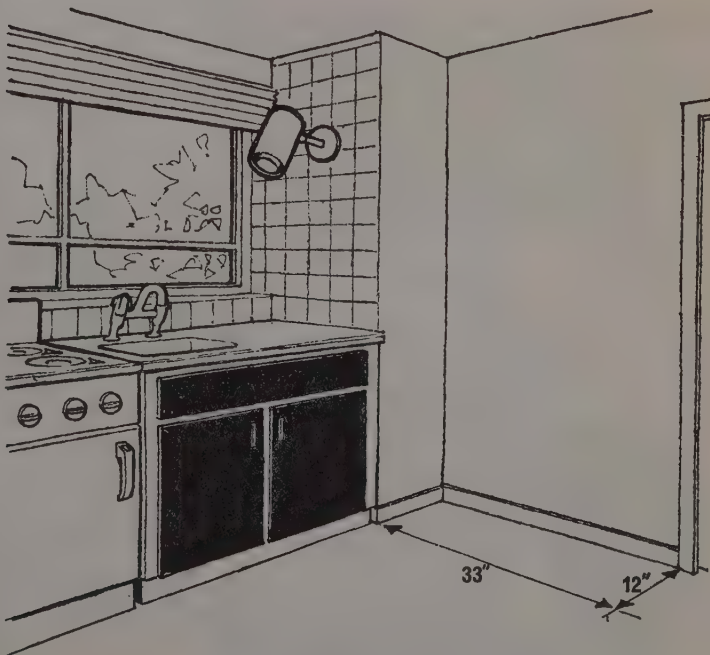


9. This sun lounge is furnished with two basket-work chairs and a trough of pot plants set on the wall above a wood-block floor. The large window overlooks the garden. Design an occasional table to be used in this room for indoor board or card games. (See page 59.)

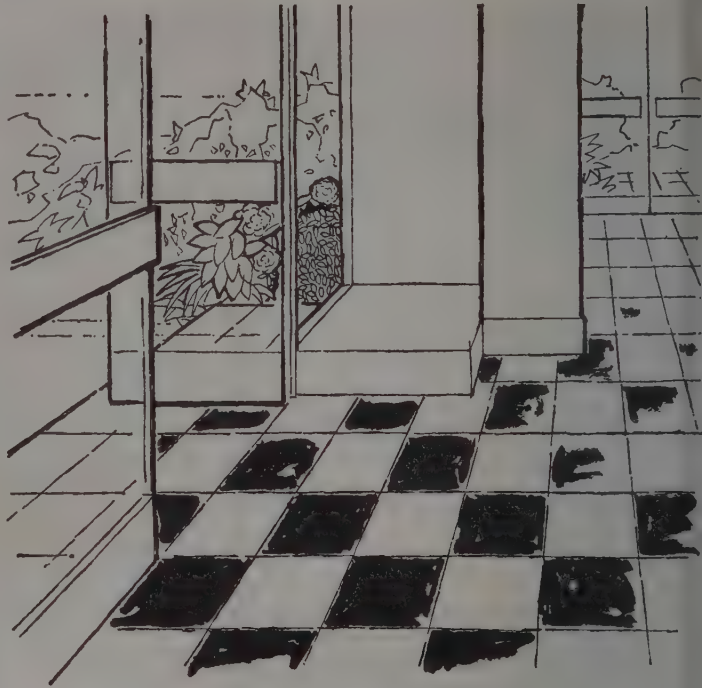


10. Further storage and display space is required in the corner of this kitchen. A lively colour scheme has been used. The walls are pale grey; the woodwork is white, with doors and drawer fronts in vivid blue; and the working surfaces and floor are predominantly orange. Design a suitable unit for this kitchen. In addition to your working drawings make a sketch of the unit in this setting.

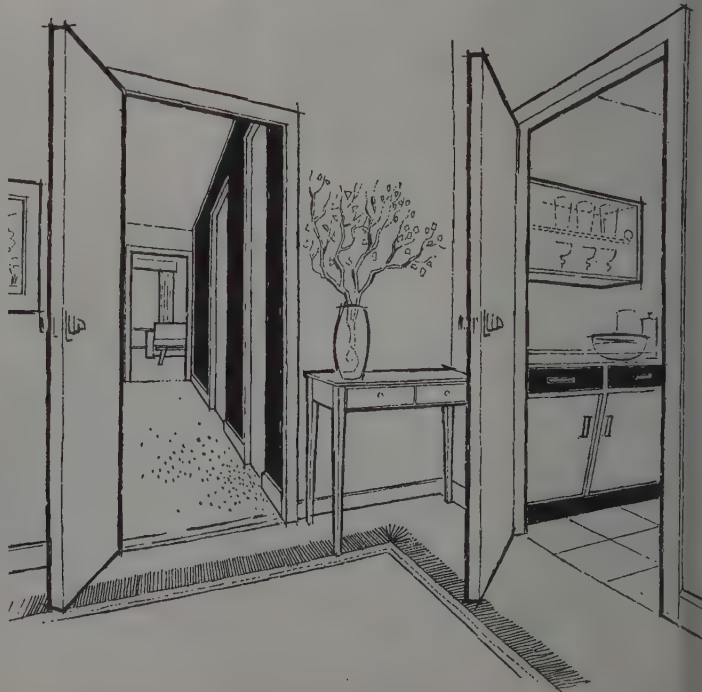
Metric conversion : 12" = 30 cm; 33" = 84 cm



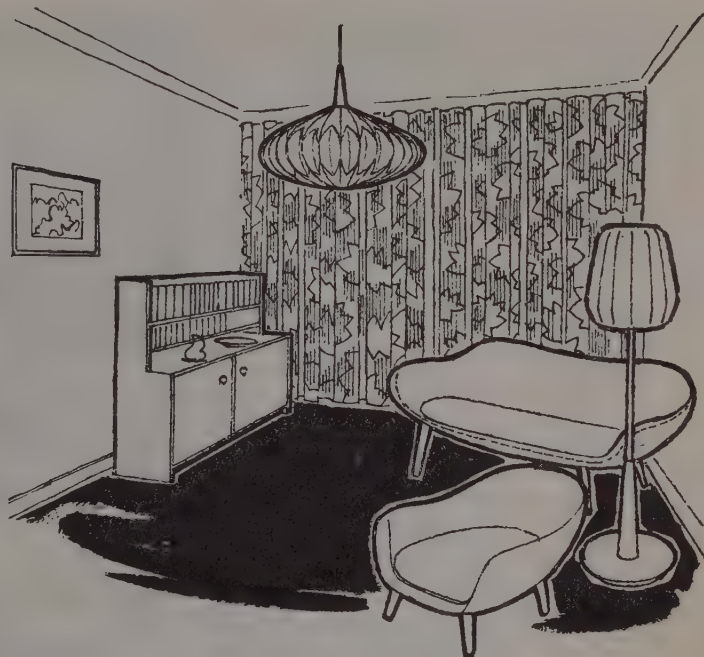
11. This is part of a school entrance hall. The small alcove by the open door measures $24'' \times 15''$ (61×38 cm). The back wall of the alcove is painted in pale ice-blue. Design a piece of sculpture entitled "Knowledge and Truth" for this alcove. You may do this either in the form of a clay model or by making sketches. (See page 39.)



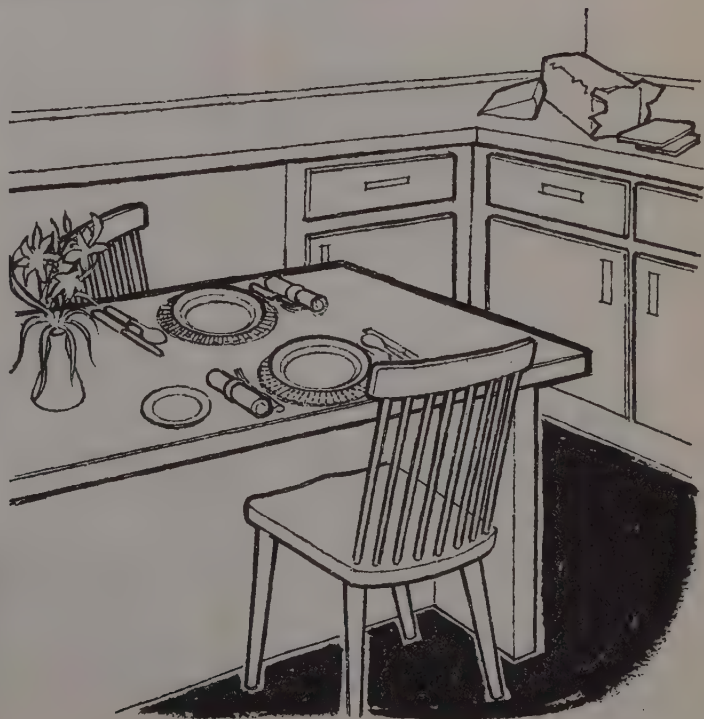
12. Afternoon tea has to be carried in this flat from the kitchen on the right, through the dining room and down the corridor, to the lounge. Design a tea trolley capable of carrying all that is needed for tea for four people. Make provision for the hot teapot and also ensure that the trolley will glide over the carpet and thresholds. (See page 41.)



13. Design a bureau to fit in the space underneath the picture on the left of this lounge. The teak storage unit on the same wall has slightly projecting sides which extend to the oak-strip floor. (See page 85.)

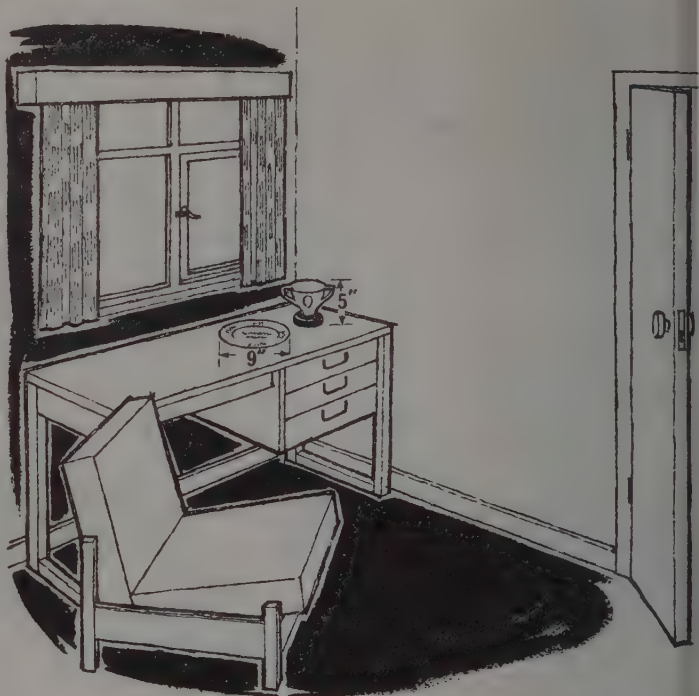


14. The dining counter in this kitchen is frequently used for meals. You are asked to design two matching boards on which to serve bread and a selection of cheeses. The counter has a white plastic laminate top. The china is dark green and the cutlery has rosewood handles. (See page 1.)



15. You have won a silver cup and a shield for swimming and wish to make a wall-fitment to display them. Design a piece of wall shelving that will not only accommodate the cup and shield but will also allow a little space for future trophies. (See page 36.)

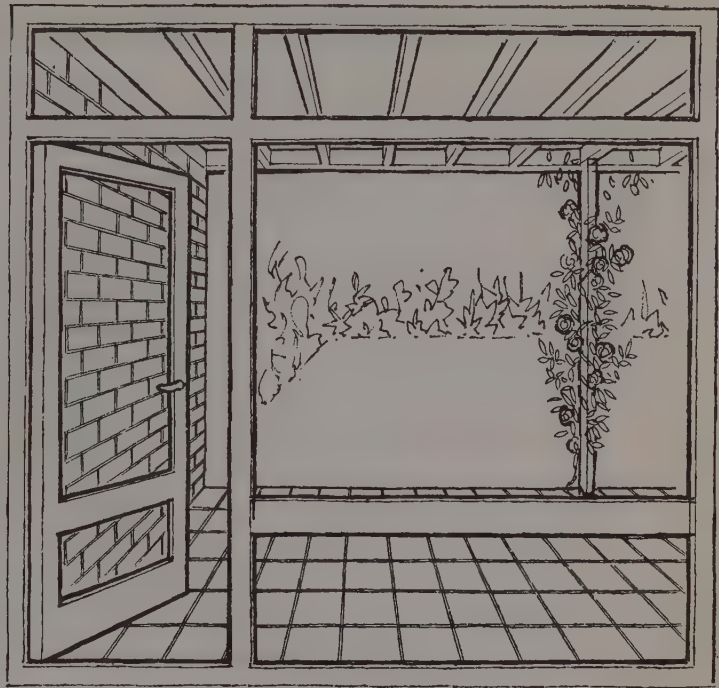
Metric conversion : 5" = 13 cm; 9" = 23 cm



16. Design a chair that can be used at the telephone and will merge satisfactorily into this hall corner. Try to make your design provide a link between the smooth rounded ends of the telephone-fitment and the angular legs of the plant stand. (See page 81.)



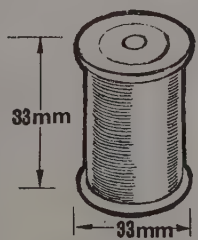
17. The woodwork of this patio is painted white, the 6'-wide floor (183 cm) is made with coloured paving slabs and the roof is open to the sky. Design a garden table and seating for meals on this patio and draw a plan showing the furniture positions and the space allowed for movement. (See page 53.)



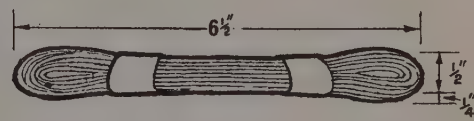
18. A needlecraft storage unit is required to contain 10 cotton reels, 9 skeins of silk, 4 packets of needles and 2 pairs of scissors. In addition, two further compartments are needed for the storage of small miscellaneous items, and also a larger space (volume at least 360 cubic inches or 5900 cm³) for wools, tapes, elastic, etc. Design a unit to meet these requirements. (See page 67.)

Metric conversion: $\frac{1}{4}$ " = 6 mm; $\frac{1}{2}$ " = 13 mm; $1\frac{1}{2}$ " = 38 mm; 2" = 51 mm; 3" = 76 mm; 6" = 15 cm; $6\frac{1}{2}$ " = 17 cm

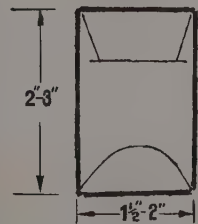
Cotton reel



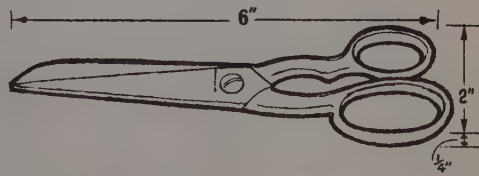
Skein of silk



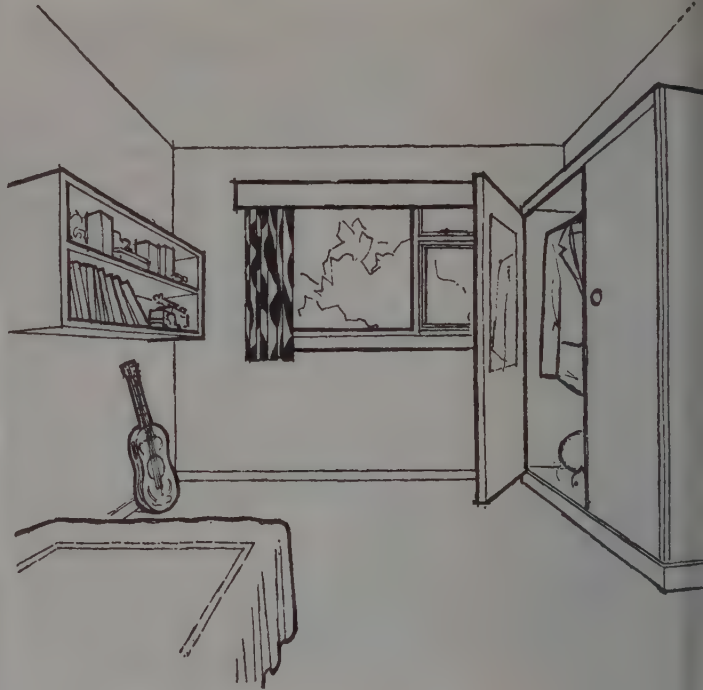
Needle packet



Scissors

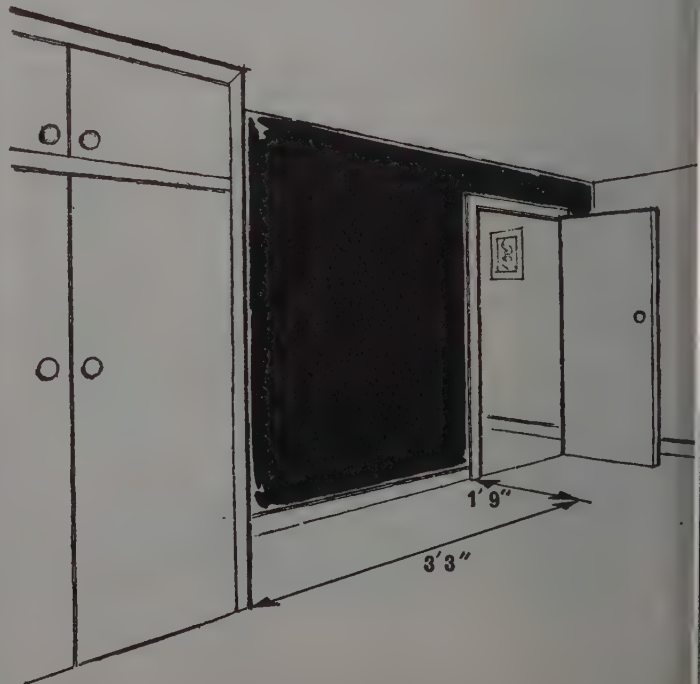


19. Design a desk or writing table to be used underneath the window or underneath the wall shelves in this teenager's bedroom. It may be a free-standing piece of furniture or a wall-fixtured, but it must accommodate stationery materials. The window measures $5' 9" \times 3' 3"$ (175×99 cm) and is $3' 6"$ (107 cm) from the floor. The wardrobe is made in oak. The hanging shelves, painted in cream, match the skirting board and window frames. (See page 90.)



20. A dressing table is required to fill the space between the door and built-in wardrobe of this bedroom. It may be built-in or left free standing, but provision must be made for storage, and for a mirror, a lamp and a seat.

*Metric conversion: $1' 9" = 53$ cm;
 $3' 3" = 99$ cm*



Room settings

The following photographs of room settings illustrate the basic principles of good design. Seven of these settings, ranging over most of the rooms in a house, reflect contemporary design influenced by the needs and attitudes of people today. The eighth shows furniture design influenced by the social conditions and needs of the eighteenth century.

The foremost requirement in good design is that an article shall fulfil the purpose for which it is intended, and to that end be strongly constructed from suitable materials. But notice how skilfully designers combine this requirement with the creation of a pleasing appearance; how, by applying the principles of proportion, symmetry, balance, variation and rhythm, they achieve a restful unity within the article, and between one article and another in any room setting.

Study these photographs carefully. See how all the component parts of a well-designed room express a theme, and how one piece enriches another. Try to pick out the dominant features that give a room character, and consider how variety and interest are created by the use of different textures, colours and finishes.

Kitchens need to be colourful and pleasant, efficient to work in and easy to clean. In the design of this kitchen the emphasis is on the large smooth horizontal areas of the working tops and the smooth vertical expanse of the very adequate storage space. Notice how monotony is avoided by the subtle change of colour in doors and tops. Notice, too, the elegant and uplifting proportions of the flush doors and how the handles are so placed that they establish a pattern of their own. Too many handles would have created a fussy effect; the drawers, therefore, are provided instead with a simple overhanging front. An excellent use of a display shelf is illustrated on the left, where the cupboards are not required to fit to the ceiling; and the glass-fronted cupboards under the centre counter combine very satisfactorily the functions of utility and display. The working surfaces are of two heights. As most cooks work from a standing position we have a raised oven and high surfaces adjacent to it. Other kitchen tasks can be done sitting down, and for these and for meals a lower surface is provided. The rhythmic placing of the coloured floor tiles helps to unify the theme of smooth efficiency expressed in all the details of this kitchen.



*Table and sideboard designed by W. H. Russell, F.S.I.A.
Chairs designed by Professor R. D. Russell, R.D.I., F.S.I.A.*

The wall units in this lounge setting illustrate how a vast amount of storage space can be obtained by making maximum use of the wall area. The metal ladder supports and horizontal shelving are spaced at varying intervals, not only in order to create interest, but also to provide for a wide variety of uses. Note particularly how these rectangles, pleasing in themselves, combine to present a unified appearance. The depth of the sideboard, writing and storage units is, of course, functional, but it also helps to give an impression of stability. The afrormosia chair frames repeat the square forms of the flooring and furnishings of the rest of the room, and the chunky appearance of the deep foam cushions imparts a feeling of comfort. Well placed between the chairs is a coffee table of convenient height, and above this the attractive lowered lighting is a justifiable innovation. The carpet stresses the warmth and defines the identity of the sitting area.



This comfortable lounge generates an atmosphere of dignity and repose. The individual elements blend so well that although each has a character of its own, no one item of furnishing has excessive prominence. Notice the satisfying proportions of the large picture windows and the full length curtains. The wooden tables can be used singly or in groups and contrast interestingly in form with the piece of abstract sculpture. The height of the single table beside the upholstered chair almost invites a cup of coffee, and the slight curve of the chair seat immediately suggests a feeling of comfort. The varying widths and depths of the wall unit are attractive and permit a wide variety of uses. Differing textures create interest: the glass of the table top, the pottery, lampshades, upholstery, carpet, curtains and foliage. Although there is a considerable amount of furniture in this room, it has been thoughtfully arranged and allows ample space for movement.



By utilizing much of the available wall space in this bedroom, a central area has been created for ease of movement. Some extra advantage might have been gained by using built-in furniture, but this would have made later rearrangement impossible. The flat sides and flush tops of the furniture units are designed to make interchange easy, and variation is achieved by the use of projecting doors and drawer fronts. The top surfaces of the chests of drawers and other storage units of the same height are not only useful but, by being continuous, serve to unify the room. Moreover, by this method of furnishing, a large amount of storage space has been provided. Although the bottom drawers are much deeper than those above, even spacing of the handles has been achieved. Their orderly grouping in threes has created a repeating pattern round the room. In this bedroom we see how individual items of furniture can be merged into a completely unified design.



This student's study-bedroom shows how effective the use of simple design forms can be in creating a functional room. The furniture here is strongly constructed in mahogany. The office table and dining chair are well placed, with the books and lamp immediately above the working surface. Notice how well the thick square edge of the table top combines with the shape of the leg and how the rebate gives them a separate identity. The vertical back legs of the dining chair maintain the insistence on the vertical line, which is a dominant theme of the room, but the need for a back rest results in the pleasing little angle at the top. The simple yet comfortable lines of the easy chair harmonize well with this dining chair. The storage unit effectively couples wardrobe space on the left with a variety of display, shelf and tray areas on the right. Also very functional in design is the vanity unit with its own lighting. The framework of the bed-settee repeats again the lines of the other chairs and emphasizes the square-form concept, another dominant theme, with the inclusion of a bottom rail. The angle of the reading lamp above the bed-settee can be easily adjusted, and the use of a wall-fixing here dispenses with the need for an additional piece of furniture in a room where every space must be used to the best advantage.



This office setting shows a large desk for an executive and a smaller desk for a receptionist. The designer of this setting has successfully created an atmosphere of comfort and efficiency. The warmth of the woodwork, curtains and upholstered swivel chairs is complemented by the cool efficiency of the matt-chrome table legs and vinyl-coated wallcovering. The interest of the protruding legs on the tables is emphasized by the clean lines of the rails and top. The symmetrical drawer pedestals impart a feeling of solidarity and, because they are clear of the floor, simplify the job of cleaning. In fact, the design deliberately avoids all awkward corners and recesses that would complicate the task of routine maintenance. The long line of hanging wall units behind the executive's desk serves as a unifying factor in the overall design as well as being conveniently placed for use. Other fitments that have an air of pleasant efficiency about them are the telephones, the fluorescent desk light and the desk trays.



Throughout the centuries men have endeavoured to design furniture that would not only serve their purpose well but would harmonize pleasingly with the room setting in which it was to be placed. This eighteenth century interior designed by Robert Adam is part of the dining room at Syon House. The refined details of the dignified architecture have been applied to the furniture. Notice that the flutings of the columns are repeated in the legs of the chairs, and that other motifs from the well-proportioned ceiling decoration are repeated in the carving on the furniture. But these embellishments are wisely subordinated to the more important elements of design: it is interesting to note, for example, the functional sweep-back of the chair arms, designed to accommodate the voluminous dress of this period. The walls were finished in stucco and adorned with statues and paintings because damask and tapestry wallcoverings, frequently used in other rooms, might have retained the smell of food. This illustrates the importance that Adam attached to consideration of purpose. Unity is achieved by the decorative bands linking the side and end walls, the freely used gold colouring and the rhythmic repetition of the architectural forms and light ornamentation. How well the furniture and room complement each other!



Copyright Country Life

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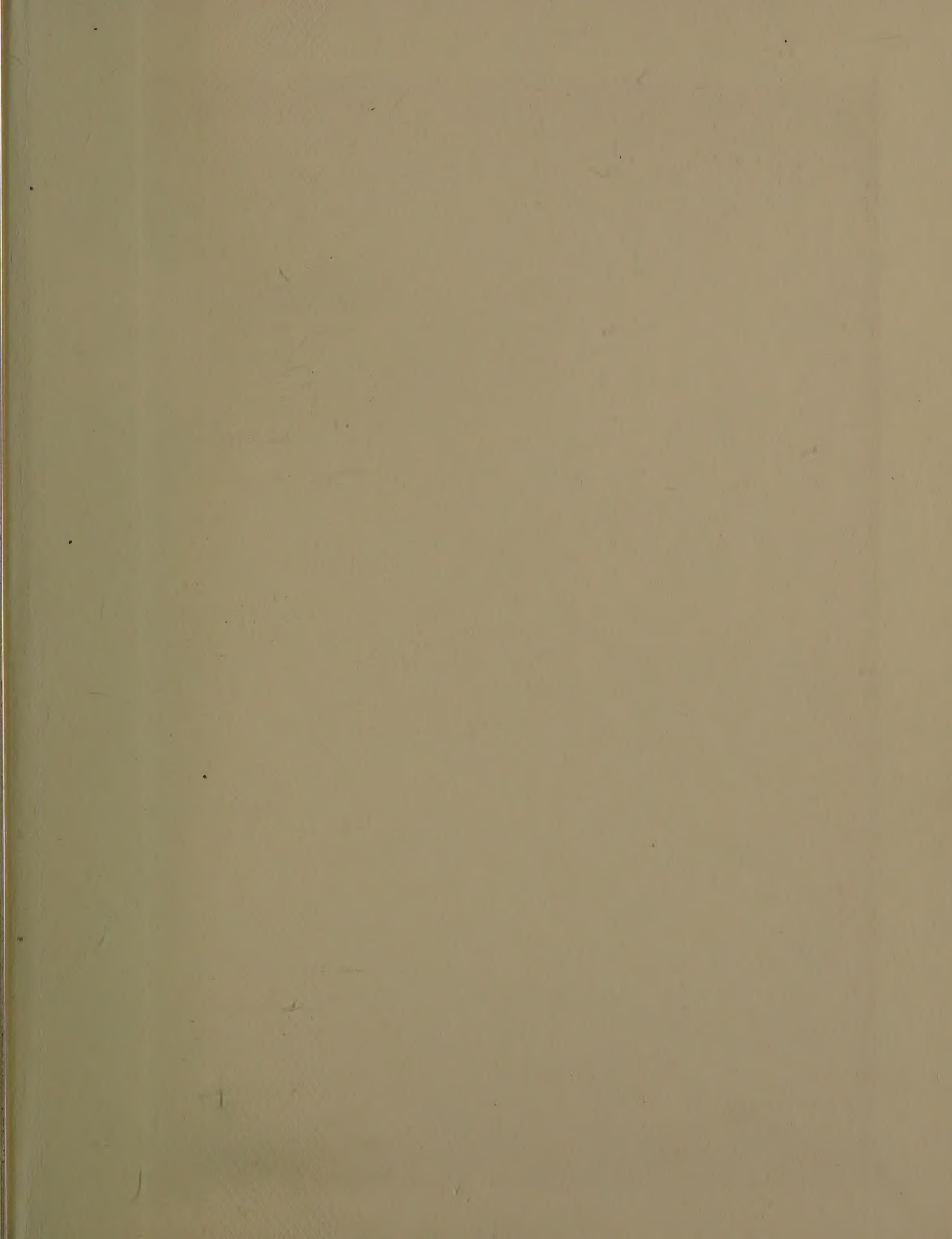
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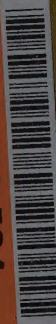
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